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AVICULTURAL MAGAZINE

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THE AVICULTURAL SOCIETY

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THE AVICULTURAL MAGAZINE

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HORNED SCREAMERS

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
AND THE AVICULTURAL SOCIETY OF AMERICA

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JULY-AUGUST; SEPTEMBER-OCTOBER, 1959

DELAY IN PUBLICATION OF THE AVICULTURAL MAGAZINE

The delay in publication of the magazine is due to circumstances beyond our control, namely the printing dispute. It was therefore decided to publish a double number—July/August and September/October—which it was hoped to produce on the publication date of the latter, but disorganization resulting from the dispute has caused yet further delay.

The *Avicultural Magazine* has appeared regularly for 65 years, even during the Boer War and the two World Wars, and therefore the present delay is particularly regrettable.

EDITOR.

* * *

THE HORNED SCREAMER

(*Anhima cornuta*)

By TOM SPENCE (Newburgh, Fife, Scotland)

The note from K. C. Lint telling of the breeding results of screamers in America prompts me to write of a pair of Horned Screamers that I have kept for nearly a year. They were imported by an Edinburgh dealer along with two others and even at this space of time I feel grateful to him for his patience with me, as I changed my mind and changed my mind again in making up a pair. They were all babies, but the two I took "peeped" their baby "peeps" at different pitches, and encouraged me to hope that they might be of different sexes. I still hope they may be a pair for there is a slight difference in eye-colour, the "female" being a pale washed-out gold while the other has a faintly richer tint. The smaller bird that I have designated "male" is the more active and demonstrative and has begun to give the hollow rumbling bellow of its kind.

[Tom Spence]
HORNED SCREAMERS
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The species is rarely imported and although I have done some research, little seems to have been written about it. The species, although not beautiful, is certainly interesting ; for example, in these juveniles the feathers of the mantle and " mane " all carried pedunculate tips which fluttered loosely and eventually became broken off. The bird is one great emphysematous air-sac, even the tips of the toes are inflated and the wings bear not one, but three, pairs of spurs, two long and sharp as those on a Green Peacock and the third, a little boss, whose existence seems to have escaped the systematists. My birds are very tame, but accidentally one bird struck my neck as it extended its wing in greeting me and gave me a very painful blow. For a bird of the duck tribe it has amazingly extensive wings, shaped and patterned much like some of the griffon group of vultures ; in soaring flight they must look spectacular. So handsome were the wings of my birds that I could not bring myself to clip them, nor to pinion them, and I have tenectomised them to preserve them intact. On my birds the horn, which eventually extends for about six inches from the crown, is still only a short worm-tip.

At first the feeding gave me much worry for they would eat nothing but lettuce, refusing all other kinds of green-food. I attempted to accustom them to a more varied diet by including bread crumbs and other finely divided food among their chopped lettuce. Despite this they extracted the lettuce skilfully and ate only the crumbs adhering to it. They were doomed to more spartan fare, however, for in the autumn after the death of my manager, I had to desert my birds for the sterner affair of earning a living and all the birds were left in the unsupervised care of an inexperienced young lad. The screamers survived and now eat biscuit meal, turkey starter, and favour unsoaked wheat above all other food. They crop young grass, but seem to graze most during the dusk.

In behaviour they show their anseriform affinities. The general gait of unhurried big-footed clumsiness and their perching habits remind me of the Magpie Geese I kept some years ago. When the " pair " has been separated the reunion ceremony is very shelduck-like though played through in slow motion. The distant recognition extension of the wings and a slow flapping is just like a grazing shelduck. A nearer approach causes the " male " to inflate his crop region in much the same way as an Orinoco Goose. Closer approach causes a really shelduck-like nodding and greeting ceremony, with the necks moderately extended, that of the " female " held lower and nearly horizontal while the " male " holds his neck more erect again copying the posture of the shelduck. When the birds are within a few feet of each other the fully extended wings are raised high above the back, the neck arched, and this posture may be held for a period of seconds in a heraldic manner. Higher intensity display consists of a

raising of the arched wings, especially by the " male " and here again the wing on the side away from the mate is raised much higher than the other reminding me much of the posture in certain tadornines and of the post-coital posture adopted by *Casarca* and *Chloephaga*. They are peaceable birds, but when approached too closely by a small bird they " nod " at it, while a larger bird causes the Screamers to raise the flexed wings with an arched neck and often to give some vocal demonstration. I would commend a study of the behaviour of the screamers to students of the more developed Anseriformes.

One aspect of their behaviour has delighted me and that is their amazing facility for learning certain things, combined with their delightful imperturbability. Last summer they were housed in a stable and when the weather was suitable, they were set to graze in the garden. Usually they were " walked " from the stable but when their slowness taxed my patience I would take one under each arm and carry them. During the first week of the garden visits, when they had certainly not more than six experiences of the journey from the garden to the stable, the gate had been left open unnoticed for a short time during the visit of a group of young people. When late evening came, I looked in vain for the Screamers throughout the garden and, fearing that my tenectomy had been unsuccessful, I had begun to think them fled away. As a last chance, hoping that someone had returned them to the stable unknown to me, I went to see and was delighted to find them sitting patiently outside the loose-box door waiting to be let in. To get there they had to cross a roadway and then to make three choices of turns in a minor maze, and I was certainly amazed at their prompt recognition of the route. After that, each morning the garden gate and the loose-box doors were opened and the birds left to find their way unhurriedly. At night when the time came they were invariably to be found waiting the chance to plod back to the stable. They have now been put in an enclosure for the summer with a night ark for a shelter. The first night they were driven into the ark, but on the evening of the second day I was not surprised to find them in the ark deep in the straw settled in for the night, having put themselves to bed.

* * *

THE TRADE IN AND TRANSPORT OF BIRDS

The conditions of the trade in and transport of birds were dealt with in an article which appeared in 1958 in the September/October number of the Magazine and comments were invited. In the November/December number of the same year the comments received from Messrs. John Yealland, Tom Spence and Derek Goodwin were published. The following comments have now been received from Dr Reginald E. B. Brown, of New South Wales, Australia :—

" I want to say how much I agree with an article by Mr Risdon in a recent issue of the AVICULTURAL MAGAZINE about the proper aims of aviculture. I am happy to state that quite a bit of this has been done in Australia—especially since the ban on the import of all birds was imposed at the end of the war. Quite a lot of the African finches are now well established here—some of them, e.g. Cuthroat, Cordon Bleu, Ruddy, Orange-breast, Melba and Munia are far more plentiful than they ever were when freely imported. The Madagascar Weaver, too, is quite plentiful—Red and Blue-headed Parrot Finches are coming along nicely—also Namaqua Doves and Bleeding-heart Pigeons, whilst the Grenadier Weaver is also obtainable. Also some of the Asiatic Munias are being bred. Of course all these birds rear their young on white ants so they are comparatively easy to breed in Australia where the ants can nearly always be obtained.

Some of the African lovebirds are also becoming plentiful, fortunately in pure strains. Peach-faced are quite common, Nyasas are coming on (both normal and a few only lutino).

I reported previously my own efforts with Tanagers. I am also having some success with African Glossy Starlings. I have 19 now—unfortunately I only had two to start with and there are no others for a change of blood.

I would like to warn members that some Australian birds at present fairly common are not likely to remain so for long—e.g. Barraband's and Yellow Rosellas. These birds have very restricted habitats—and this country is developing so rapidly and the bush is changing so much—that habitats are likely to be destroyed at any time—sometimes one visits an area that one has not seen for a few years and finds it quite unrecognizable. Some time ago I visited a spot some distance west of Sydney where I saw a flock of Magpie Geese when I was a boy—it is now a busy shopping centre and one would not see a Magpie Goose within a thousand miles of this place.

Concerning inbreeding in birds. The millions of European Sparrows and Starlings in Australia are said to be descended from two dozen pairs of each. If so, and I think this is correct, they must be *very* inbred. There are possibly more of them here now than there are in Europe and I assure you they are very vigorous and extremely fertile."

Action taken by the Avicultural Society

At the Council meeting of the Society held on 10th November, 1958, it was decided to set up a Sub-Committee to examine the conditions under which birds are imported and transported and the following were appointed : Miss Phyllis Barclay-Smith, Mr G. S. Mottershead, Mr C. M. Payne and Mr J. J. Yealland (Convener). The Sub-Committee has met three times and their first consideration has been the type of transport box that should be advocated for different species of birds, though the whole question, including conditions in dealers' shops, will be dealt with. In addition it was agreed that, in view of the appalling condition of a consignment of birds held up at Nairobi airport in June 1958 which was reported in the *East African Standard*, the President should send a letter to that paper setting forth the views of aviculturists on the matter. The following letter duly appeared in the *East African Standard* on 1st December 1958 :—

> As President of the Avicultural Society, I wish to express on behalf of the Council of that Society, their condemnation of the bad condition, as reported in your columns, of a consignment of birds at Nairobi Airport, and their welcome of the measures of control for the export of birds which have been introduced.
>
> The Avicultural Society deprecates the infringement of the law of any country and is equally anxious for the preservation of rare species, and the prevention of cruelty in any form, as the animal protection societies. At the last meeting of our Council a special committee was set up to go into the whole question of the conditions of transport of birds by air.
>
> In the preservation of rare species aviculture is playing an ever more important role, by building up stocks in captivity of species which are in danger of becoming extinct in the wild state. To quote one example—the Nene Goose of Hawaii, which had fallen to dangerously low numbers in the wild, has been bred in captivity with such success that it will soon be possible to liberate captive-bred birds to re-inforce the wild stock on the island. Among other examples may be mentioned species of Pheasants and Parrots.
>
> It has been stated that many lovebirds find their way to small cages in private houses in England, but no aviculturist would keep a lovebird except in an aviary, and I certainly have never seen one in a cage. I think this statement may have resulted over a confusion in names, for Budgerigars are frequently referred to as lovebirds. Budgerigars, which have been bred in captivity for generations, are great favourites as pets.
>
> DAVID SETH-SMITH.
> London. *President, Avicultural Society.*

In February 1959 the British Standards Institution set up a Technical Committee on the Carriage of Live Animals by Air—to quote from the *British Standards Institution News* of April 1959 :—

> " The welfare of day-old chicks and Rhesus monkeys is among the objects of a new committee of experts which hopes to lay down British Standard recommendations for the carriage of live animals by air.
>
> Although a somewhat unusual assignment for a B.S.I. technical committee it was felt that in the absence of any other all-embracing national organization, the B.S.I. was probably the best forum in which to establish rules for the safe packaging and transport by air of live animals.
>
> As London Airport and other British aerodromes are transit points for a large proportion of animals being shipped between one country and another it was

thought that the Institution's close links with the standards organizations of other nations would be an additional advantage in getting standard proposals agreed to internationally.

The committee of experts which is now to begin the task of laying down standards includes representatives of major airlines, air transport firms such as Thomas Cook's and Lep Transport, the Zoological Society, the R.S.P.C.A., Universities Federation for Animal Welfare, Medical Research Council, Poultry Association of Great Britain and the Ministry of Agriculture. The Chairman is Dr. W. Lane-Petter of the Medical Research Council and a noted authority on animal welfare.

This committee hopes to draft standards covering all aspects of air transport of animals with special reference to the design of suitable containers, ventilation, feeding, watering and so forth.

Priority is being given to arrangements for the carriage of day-old chicks. Urgent consideration will also be given to the transport of monkeys."

It was decided to divide the work between three sub-committees to deal with (1) birds and reptiles, (2) mammals and (3) fish, amphibia and invertebrates.

The Avicultural Society was invited to nominate representatives both on the main Committee and also on the sub-committee on birds. As Mr Yealland, with Mr Oliver Graham Jones, was representing the Zoological Society of London on these committees Miss Barclay-Smith and Mr Mottershead were appointed. Mr Yealland was elected Chairman of the Sub-Committee dealing with birds and reptiles and a number of meetings have been held. Two of these were attended by Mr C. S. Webb when he was in this country for a short time and whose advice and experience were of the highest value.

The problems are very complex and the formulation of recommendations must take some time, but when they are finally accepted as a British standard, it is hoped that conditions will be considerably improved. Apart from the standard of suitable transport cases there is the far more complex problem of the human element—the proper care of birds en route and in transit, stowing on the aircraft, and long delays through customs, all of which are extremely difficult to deal with.

Members of the Society will be kept informed of progress made and comments and suggestions will be welcomed by the Editor.

PHYLLIS BARCLAY-SMITH.

* * *

SUCCESSFUL BREEDING OF THE STREAMER-TAILED HUMMINGBIRD

(*Trochilus polytmus*)

By RONALD T. REUTHER, General Curator, and HAROLD G. LAMM, Curator of Birds (Cleveland Zoological Park, Ohio, U.S.A.)

An event of great rarity is the hatching, in captivity, of any species of hummingbird.

Captain R. S. de Quincy of Marden, Hereford, England, was the first to report * the hatching, in captivity, of Streamer-tailed Hummingbirds. Two chicks of this species hatched in June, 1958, at his aviary in Marden. One of the chicks died 21 days later, as did the hen. The second chick died about one week later.

Thus, it was with great anticipation that the staff of the Cleveland Zoo observed the initial breeding behavior of a pair of Streamer-tailed Hummingbirds in their " hummingbird habitat " flight cage at the Cleveland Zoo. The male was received June 21, 1956, and the female July 9, 1957, both as adult birds. Within two or three weeks they were put together in the habitat cage which also contained several other species of Hummingbirds, White-eyes, Sunbirds, Yuhinas, etc. This exhibit measures 6′ 3″ wide by 9′ 6″ high by 17′ 9″ long. Both the north and south 17′ 9″ sides contained a 17′ 9″ × 6′ 9″ glass panel. The south wall is an outside wall. The cage is planted with a variety of shrubs, has a small, constantly flowing, stream of water running through it and is thermostatically maintained at a minimum temperature of 70°–72° F.

No special behavior was noticed between the two birds until the last week of February, 1959, when the male began courting the female. In the first week of March copulation was observed and repeated mating took place during the next several days, in each case on a plant branch. The female was seen carrying nesting material to several sites in the habitat cage during the second week of March. The pair was isolated as the Yuhinas destroyed the initial nesting attempts and it was feared other birds might also interfere.

Therefore, on March 14, both birds were removed to another glass-fronted exhibit. This exhibit measures 4′ 8″ × 4′ 3″ at the bottom and 4′ 4″ × 3′ 4″ at the top. The height from the top of this cage to the bottom, is 8′ 4″. All walls of the cage are solid except for the lower 6′ of the 8′ 4″ wall on the viewers-side which is a glass panel. No copulation was observed from this time onward.

A culture of fruit-flies was established and maintained on over-ripe fruit in this exhibit, as a food supplement, in addition to the formula that was available to the birds at all times.

* Personal communication.

Various types of plants such as Grape Ivy (*Vitis coignetiae*), Citrus (*Citrus limonia*), Begonia (*Argenteu-guttata*), Bougainvillia (*Bougainvillae glabra*) and *Diffenbachia* (sp.) were placed in the exhibit to provide perching and possible nesting sites. Fine strands of hemp-string, Spanish-moss and cotton-wool were supplied as nesting material. On March 15, the female was observed carrying strands of hemp-string to a crotch on one of the plants. She did this for the next two days and then started to build in another location. On March 22nd, she utilized a third location. The structures she assembled in each case appeared flimsy and unsatisfactory, so an artificial nest of clay and strands of fine hemp-string was fashioned by hand and placed in the location of her choice of March 22nd. The point of attachment of a branch to the main trunk of the begonia plant was the nest site. She seemed to accept this artificial nest without hesitation and started adding to and shaping it to her satisfaction. The male never was observed to aid in nest construction.

On March 24, the female was observed on the nest at 6.30 A.M. At 8.00 A.M. she was off the nest and one pure white egg was observed in the nest. During the day she was seen carrying more nesting material to the nest. The male kept interrupting her work by pursuing her around the cage. She would have nothing to do with him and kept retreating to other perches every time he came near.

On March 27, the female was found, apparently in difficulty, on the floor of the cage at 6.30 A.M. She acted as if she were egg-bound. She was picked up, fed by dipping her bill in the food solution, placed on a perch in her cage, and at 7.30 A.M. she was back on the nest. At 8.00 A.M. she left the nest and a second egg was in the nest. On close inspection, this second egg was seen to be malformed, being extremely blunt at one end. The female sat on the nest for short periods of not longer than 10 minutes, the rest of the day. The male still pursued her every time she left the nest. She was away from the nest for as long as one hour and fifteen minutes.

On March 29, believing the presence of the male Hummingbird in incubation and rearing young was not required and indeed, possibly hazardous to successful hatching and rearing, we removed the male to a separate cage.

On March 31, the malformed egg was found broken in the nest. The female continued incubating the remaining egg for the next ten days. During this period, she was observed off the nest for intervals as long as one hour.

On April 8, the branch of the begonia plant, to which the nest was attached, fell off, spilling the nest and the remaining egg on the floor of the exhibit, breaking the egg. This egg contained an apparently well-formed live embryo.

On April 10, the male was again placed in the exhibit containing the female. On this date, the begonia plant in the cage was replaced by a California privet (*Ligustrum ovalifolium*) and several other plants were replaced.

During the next two weeks the male was again observed copulating with the female. During the last week in April, the female repeated the procedure of carrying nesting material to various locations. An artificial nest, of the same material described earlier, was on April 22nd again placed in a location on the privet plant, which was the third site chosen by the female. The nest was, this time, wired on the stem of the plant so that it could not fall.

On April 30, at 8.30 A.M., the female was off the nest and one egg was observed in the nest. On May 2nd, at 7.00 A.M., the female was off the nest and the second egg was seen. Both eggs appeared normal. The hen did not start regular incubation until after the second egg was laid.

On May 3, the male was removed. On June 23, he died of unknown causes.

In both nestings the female always incubated in the same position, facing the glass, and thus, the public. This was the position that afforded her head region the most light.

On May 18, at 8.20 A.M., the female left the nest briefly and it was observed that one chick had hatched. It had not hatched before 6.30 A.M. when the two unhatched eggs were last seen. After returning to the nest, the hen again left the nest at 9.30 A.M. and at that time, there was still just the one young bird. At 10.30 A.M. the female again left to feed and the second chick was observed half-out of the shell. At 12 noon both chicks had hatched and the female had cleared the nest of egg shell.

The incubation period thus observed, was 16 days.

On June 3, at 2.00 P.M., one young was found dead in the nest. It appeared well when seen earlier that morning. The dead chick appeared to have been in good condition. A few breaks in the skin were noticed which appeared fresh and some blood on the left wing was noted. While the cause of death is unknown, it is felt that the artificial nest remained too rigid and small and thus, the two growing birds were overcrowded. The dead chick weighed, within 1½ hours after death, 34 grains. On June 6, the remaining young bird was first seen exercising its wings while perched on the inner lip of the nest. This was done generally after each feeding by the hen. The hen's usual routine was to feed from the formula bottles and then gather fruit flies before feeding the chick by regurgitation.

On June 12th, the surviving young hovered, about 2 inches, above the nest for two minutes before it fell back into the nest. It did not leave the nest again that day or the next. On June 14, between

9.30 A.M. and 10.00 A.M., this bird flew from the nest, never returning and perched on a nearby twig.

On June 15, at 9.30 A.M., the young hummer was first seen drinking from a bottle feeder itself. However, the mother still fed the chick regularly and often. She was still feeding the chick on June 30. Thinking that the chick should be feeding itself, without the help of its parent, a bottle feeder was placed close to its favorite perch and it immediately fed. The following day, the hen continually agitated the chick and would not let it feed, thus, we removed the hen from the exhibit on that day and placed her in a separate cage by herself.

On July 3, the female laid another egg on the floor of the cage. This egg could not have been fertile as the male had been removed May 3. The same day, July 3, she was put into the large hummingbird habitat exhibit where the whole episode originated. There is one male Streamer-tail with her, thus, we again have a pair and possibilities of a repeat performance.

All of our hummingbirds and sunbirds are regularly fed the following formula which has been the practice for several years.

Put into juicer (blender)
- 10 meal worms
- 2 peeled grapes
- 1 piece raw horse liver (one inch square)
- 1 teaspoon raw carrot
- ADD : water

Into measuring cup :
- 2 ounces honey
- 1 tablespoon sweet condensed milk
- ADD : water (warm) to dilute.

Pour contents of juicer into measuring cup, add sufficient water to make 32 ounces and stir well.

We normally feed approximately one-half the above mixture at 8.00 A.M. and refrigerate the remainder. At 1.00 P.M., the feeders are removed and replaced with clean feeders containing the balance of the mixture.

At 4.00 P.M. the feeders are removed and replaced with clean feeders containing the following solution :

Put into measuring cup :
- 2 ounces honey
- 1 teaspoon vitamin B (Thiamin chloride solution 1 mg. per drachm)

2 tablespoons canned orange juice

1 tablespoon each of
- canned tomato juice
- canned grape juice
- canned apricot juice

ADD : water to make 12 ounces.

This formula is sufficient to feed 12 hummingbirds for 24 hours. During hot weather, these solutions have a tendency to sour and thus, the bottles must be emptied, cleaned and fresh solution introduced more frequently.

Grateful acknowledgement is made to Keeper Vincent Rimedio who actually built the artificial nests and keenly observed the activities of these birds.

BREEDING OF THE SLENDER-BILLED COCKATOO

(*Kakatoe tenuirostris*)

By KENTON C. LINT (Curator of Birds, San Diego Zoological Gardens, San Diego, California, U.S.A.)

Slender-billed Cockatoo, the Nasicus Cockatoo, the Long-billed White Cockatoo Ger., Nasenkakadu, Kleiner Nasen-kakadu, Langschnabeliger Kakatu ; Fr., Cacatois nasique, Nasiterre ; Dut., Neus Kaketoe.

A Slender-billed Cockatoo (*Kakatoe tenuirostris*) was hatched 23 February, 1959, in the San Diego Zoological Gardens. This is the first bird of this species to be successfully hatched and reared in the western hemisphere.

A search of the literature reveals only one questionable record elsewhere in the world in the last hundred years. In " Records of Parrots Bred in Captivity ", Part II (cockatoos and macaws), Arthur A. Prestwich, 1951, gives the following account : " This entry is made with considerable reservation. At the 9th June, 1854, meeting of La Société Zoologique d'Acclimation, M. Pucheran gave a brief account of a visit to San Donato, Italy, the menagerie established by Prince Demidoff. He had been very impressed by several breeding events that had taken place among the mammals and birds during the two previous years. After noticing the successes with the mammals he says : ' Among the birds were two Kakatoes nasiques ', (*Bull.*, 1854, 230). It is not quite clear whether these birds had been bred or were merely inmates of the menagerie, but I believe the former is intended."

This unusual cockatoo is found in eastern, southern, and north-eastern Australia. The general color is white, tinged with sulphur-yellow, especially on the under surface of the tail. Base of the feathers on the head, neck, throat and around the breast is pink. Base of the forehead and a large patch in front of the eyes are red. Bill is whitish horn in color. Upper mandible is very long and slender. Eyes are dark in color. Total length is 17–18 inches.

Also known as the " Corella " in Australia, the Slender-billed Cockatoo feeds almost exclusively on a small yam which it digs with its long bill. Roots, bulbs, and tubers form its staple diet. Such a vast amount of digging must wear the upper mandible very rapidly, but this is compensated for by the rapidity of its growth. Although it has a grotesque appearance, this species is well known for its gentle disposition and talking ability.

Our breeding pair of Slender-billed Cockatoos were imported from Sydney, Australia, in 1951, through the generosity of Sir Edward

Hallstrom, President of the Taronga Zoological Park Trust. The breeding pair are eight years old.

A single egg was laid 22 January, 1959, in a wooden box, twelve feet from the floor of the cage. Wood shavings and soil were equally mixed for nesting material. Twenty-nine days later a chick was hatched. Only the hen bird incubated the egg.

Every trick in the book was used to induce this pair of birds to nest in captivity—different nesting facilities, nutrition, care and management all were important factors leading to the event.

The diet in captivity includes sunflower seed, whole corn, wheat, apple, carrots, sweet potatoes, bread, lettuce, corn-on-the-cob, pinion nuts and peanuts. All were readily eaten daily. This diet was supplemented with garden snails, mealworms, and cuttlefish bone to stimulate egg laying.

Though still plentiful in some parts of its range, in many districts the " Corella " has become scarce because of the introduction of sheep and cattle diminishing its natural food supply. The activities of trappers, and destruction by farmers when flocks of Slender-bills raid newly planted grain fields, reduces the population of this species in its native land. Before the " Corella " was placed on the list of protected birds, Sydney bird shops were crowded with young birds of this species. Thousands of nests were robbed in order to meet the demand for young " Corellas " as pets.

* * *

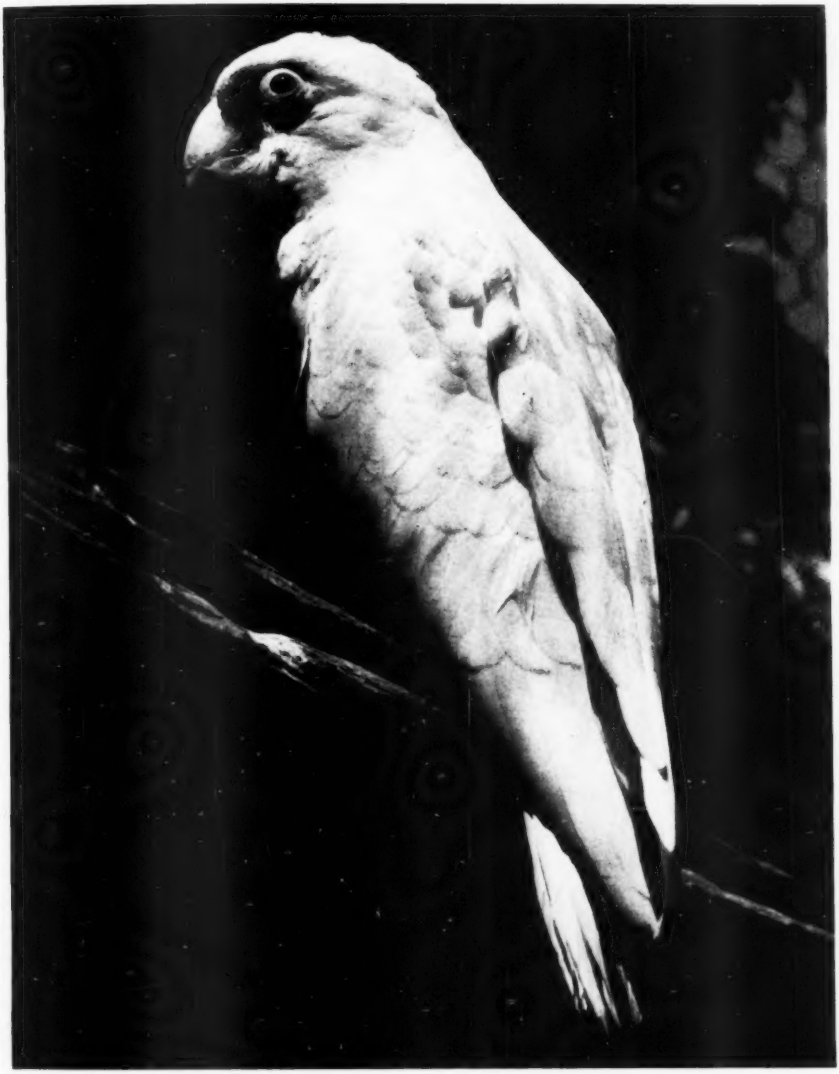
A NEW RATION FOR FLAMINGOS

By William G. Conway

(Curator of Birds, New York Zoological Society, U.S.A.)

There appear to be as many methods of feeding flamingos in captivity as there are flamingo keepers, but every aviculturist attempts to provide the basic dietary essentials : protein, fat, carbohydrate, vitamins and minerals, plus one or more ingredients calculated to provide a source of pigment to color his birds' feathers. We have learned, through pale pink experience, that the flamingo is unable to synthesize its own " flamingo " red unaided. Some recent experiments at the New York Zoological Park have resulted in the adoption of a new ration which has produced very brightly colored birds and aroused the admiration and interest of visiting bird enthusiasts.

The flamingo's feeding apparatus consists of a thick, muscular tongue set within a channel-like beak, both tongue and beak lined with strong, comb-like filaments. These specializations, augmented by the powerful pumping actions of the tongue, contrive to give



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[San Diego Zoo

SLENDER-BILLED COCKATOO (*KAKATOE TENUIROSTRIS*)
Age 104 days, 4th June, 1959.

[To face p. 108

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[New York Zoological Society

RIGHT WING OF ONE OF THE TEST BIRDS (*Phoenicopterus ruber*) WITH ITS NEWLY GROWN, DEEPLY COLOURED FEATHERS FORMING A DARK GREY PATCH

[To face p. 109

flamingos a superb food strainer which enables them to secure the minute animal and vegetable life contained in the dense waters and mud of lake and lagoon bottom, thus tapping an incredibly rich source of food probably available to no other higher vertebrate. The efficiency of this food-gathering mechanism may explain the subsistence of the incredibly dense transient populations of Greater (*Phoenicopterus antiquorum*) and Lesser Flamingos (*Phoeniconaias minor*) on some surprisingly small east African lakes. In captivity, a satisfactory substitute food must be of such a consistency that the flamingos may employ their super-strainers, and be palatable enough to attract their interest. This means that a food may be mixed that is soupy and mud-like in texture, but which must also meet flamingo nutritional requirements, be practical to prepare, easy to feed and reasonably economical. Besides all this, it must contain some substance or substances to keep the birds in good color. In recent years, zoos have shown varying degrees of success meeting these requirements, and a great variety of sources have been employed to provide the color element of their diets.

At present there seems to be little agreement on the exact nature of the pigments normally found in flamingo feathers or the importance of the roles of those colors which have been identified. For some time a carotenoid called astaxanthin was considered the primary red pigment, at least in the plumage of the American Flamingo (*Phoenicopterus ruber*). More recently, doubt has been cast upon this assertion and, for the present, we must be satisfied with the more general statement that some sort of carotenoid pigment extracted from the natural diet is normally used by flamingos to color their skin and feathers red or pink. Volker (*J. Orn.* 99 : 209–217) has recently suggested that yellow carotenoids present in the food may be transformed into the red carotenoids present in the feathers. It appears that flamingo color biochemistry is rather more flexible than we would at first have suspected. In any event, from avicultural experience, we know that red pepper, carrots, lobster, shrimp and crab carapace all carry carotenoid pigments that will produce some color in flamingos. Until recently, our ration contained most of these ingredients and our birds were pink. However, we were not satisfied with either the birds' color or the logistics of the ration, and, like all flamingo keepers, we found ourselves constantly looking for a way in which to improve the color of the flock.

Despite the greater or lesser degrees of success which zoos using vegetable sources of carotenoid to color their flamingos had reported, we were plagued by reports from certain color biochemists whose work seemed to indicate that a really deep flamingo red, such as *ruber* assumes in the wild, was dependent upon carotenoids like astaxanthin, which may only be derived from the animal segment of the bird's

diet. As a zoo source, shrimp was the most loudly touted of these animal carotenoid sources, but those of us who have used shrimp found that although the fresh product produced better results than the dried meal, it presented a severe economic and spoilage problem, for fresh shrimp is expensive and, when ground, has few peers in the race to deterioration in the hot sun of a flamingo enclosure. Besides, in our experience, the quantities of shrimp we were able to provide did not produce deep flamingo color. The evidence from zoos using red pepper or carrots for coloring their birds militated against accepting the necessity of animal carotenoids, and to further convince us, investigations of the food habits of the Lesser Flamingo and the high Andean flamingos, including *Phoenicopterus chilensis*, *Phoenicoparrus andinus*, and *Phoenicoparrus jamesi*, all indicated that algae, probably rich in vegetable carotenoids, formed a major portion of the natural diets of these species. Indeed, it even appeared that some of these birds had no other major source of carotenoids. Thus, vegetable carotenoids seemed a reasonable source to check for a flamingo coloring agent, but we were beginning to realize that a simple additive was not the entire answer.

Breeders of red-factor canaries have long known that certain food items have an adverse effect upon the red coloring of their birds even though the administration of " color food " is held constant. The commercial poultry industry has conducted research on a mammoth scale to gain control of the skin and flesh color of the chickens and the yolk color of the eggs it markets. Now, for example, the poultry farmer may cater to the New York taste for a light yolk or the mid-west taste for a more strongly colored egg yolk by varying the ingredients of the diet he feeds his birds. Investigation has demonstrated that some common poultry feedstuffs such as soybean oil meal, meat scrap, fish meal and fish oils contain a factor or factors which inhibit the deposition of yellow pigments in the beaks and legs of growing chickens. On the other hand, chickens fed the dye Sudan III or lobster shell, carrying astaxanthin, will lay eggs with bright red yolks ! While no one can say whether flamingo coloring will react in red-factor canary or broiler fashion, these facts formed interesting background upon which to base an experimental flamingo ration.

To form the nutritional basis of a new flamingo menu we chose an " open-formula," commercially available, poultry " Super Laying Mash," which is low in feedstuffs that might detract from the deposition of carotenoid pigments in skin or feathers. The search for an economical and nutritionally satisfactory source of concentrated carotenoids ended with the discovery of a product with the euphonious title, " 180 D Super Caradee." As a vitamin supplement it provides 250,000 U.S.P. units of Vitamin A per pound. It seemed a sure source for associated carotenoid pigment. It is a carrot oil concentrate in an

alfalfa leaf meal carrier supplemented with " D " Vitamins, produced by Nutritional Research Associates, South Whitley, Indiana. To Caradee, which comprises 10% of the ration, and the Laying Mash, which makes up 55% of the food, we added raw ground carrots, par-boiled ground horse meat and bone meal to complete a ration that is easy to prepare, economically feasible and reluctant to spoil.

Bird feathers are essentially dead structures once they have reached their normal size, and, contrary to the expressed belief of many aviculturists, they change only very slowly through deterioration or wear so that special measures taken to improve feather color after a flamingo has molted to a pale pink will have no effect until the next molt, which may be many months away. While Heinroth has noted that Cattle Egret plumes do change color from white to yellowish, perhaps in a deteriorative fashion as the result of special light reactive chemical structure, it has not yet been demonstrated that any species may change the colors of its feathers as the result of diet after the feathers have attained their full growth and before the next molt. Processes of osmosis are sometimes referred to, but they have not been demonstrated. We have watched our flamingos and several other species very carefully with this argument in mind, and can state that the only birds which showed feather color change were those in which new feathers had grown some time following the introduction of the new diet. In any event, we were unwilling to wait the better part of a year to find out whether our new ration was producing the desired effect in the flamingo flock, and after the birds had been eating the food for approximately one month, we chose two pale experimental birds and pulled a large, square patch of feathers from the right wing of each. In the ensuing weeks, the flamingos, especially the test birds, were not only observed daily, but visited by hopeful keepers and curator so frequently that it seemed almost impolite to be unable to raise scapulars and honk the proper greeting notes as a member of the flock. During the fifth week of the experiment, the birds that had been plucked were again captured. We were wonderfully rewarded by the sight of two pale pink birds, each with a bright rose red patch on its right wing ! Since this experiment took place eighteen months ago, our birds have completed a major molt and their newly deepened color causes constant comment. As a check of the normality of the new hue, we took the precaution of purchasing two freshly captured adults in full wild color. These birds blended perfectly with our flock and gave a direct comparison which satisfied us that not only was the color of our birds satisfactorily deep, but also of the proper hue. Three forms are exhibited in our enclosure, and, thus far, all seem to respond well to the new food. The species exhibited are *Phoenicopterus ruber*, *Phoenicopterus antiquorum*, and *Phoenicopterus chilensis*. But, one word of caution, our *P. chilensis*

birds, which have become very strongly colored and which are usually distinguished by their bluish, red-footed and red-jointed legs, have developed bright yellow-green legs set off in truly spectacular fashion by their vermilion tibio-tarsal joints and feet !

* * *

THE BREEDING OF THE OLIVE-BACKED THRUSH

Hylocichla ustulata swainsoni (Tschudi)

By Charles Everitt (South Norwood, London, England)

In the early part of 1957 I obtained a pair of North American Thrushes. They were not newly imported having been accepted by the person from whom I got them in exchange for some other birds. I was told they were Hermit Thrushes but I was not at all happy about this identification for they did not resemble closely enough any illustrations I had seen of Hermits, even taking into account the loss and distortion of colouring that often takes place during the process of reproduction in print. However, pending making any further enquiries I released them into a flight measuring fourteen feet, by three feet, by six feet high. Eight feet of the flight was actually inside a birdroom with an outside extension of six feet. Previously there had been a pair of Zebra Doves in the flight for which I had fitted up two nesting-trays, one in the inside flight and the other outside. Both trays were fitted about nine inches from the top of the flights and in the corner farthest away from the entrance doors.

Within four days the thrushes had constructed themselves a nest on the inside nesting-tray. These trays measure about eight inches by six inches, with an inch-and-a-half rim all round. The hen bird did most of the building using pieces of hay and dried grasses that they had both collected from the outside flight. It was a circular open nest about six inches across at the top, the sides rising some three inches. Four eggs were duly laid, the hen sitting constantly from the time of laying the second egg. They were of a sky-blue colour, heavily flecked in sepia-brown at the broad end and they measured 16 mm. by 22 mm. All hatched on the fourteenth day from the laying of the first egg, the female having done all the incubating, but, despite an ample supply of live food always being available in the inside flight, the parent birds deserted the chicks after four days and they all died. There was no attempt at further nesting that season as both birds went into a heavy moult. I was not unduly perturbed, although not a trifle disappointed, for I felt it was rather a lot to expect birds to settle down so quickly and rear a family.

When the moult was completed I decided to ascertain for a certainty exactly what species of thrush they were. With the co-operation of the Natural History Museum, my wife examined endless numbers of skins and books of reference leading to the final conclusion that they were Olive-backed Thrushes *Hylocichla ustulata swainsoni* which was further borne out by the fact that their song had an upward trend whereas, according to the books, all other species of thrush sing in a descending cadence.

In 1958 they went to nest in late May using the same site, but this time they lined their nest with mud. Again four eggs were laid and hatched out. Every conceivable form of live food obtainable was provided—all placed in the inside flight—but after only two days the chicks were deserted and the food left untouched. As in the previous year the parent birds went into a moult immediately and so ended another unsuccessful attempt.

This year, 1959, it seemed that they were not going to nest at all for, although the male bird was in full song, they showed no interest in each other. However, on 9th June, we saw the hen busily making a nest of dried grass and rootlets she had gathered from the outside flight. She had chosen the same nesting tray and this time my wife provided a supply of mud in the form of "John Innes Compost" well soaked. With the combined use of natural dried grasses—growing grass which had dried up in the flight as opposed to hay—and the "super" quality mud, a really beautiful nest was the result. The first egg was laid on 11th June, the full clutch of four being completed by the 14th.

I felt that drastic action was called for this time so, since I had seen the male bird driving the hen every time she left the nest for a moment, I decided to remove him just prior to the eggs being due to hatch. This I duly did on the 24th, and put him out of sight in another bird room. I say out of sight, for to have removed him out of hearing would have necessitated taking him right out of the neighbourhood since his song, sweet as it is, is very penetrating.

The first chick arrived late on the 25th, and the nest of four were all out by the following morning. Again an abundance of live food was placed in the inside flight but, as I had noticed the parent bird scratching about in the outside flight, I tossed some gentles into her.

She immediately gathered them up in her beak—about eight at a time—and flew inside and fed the babies. Henceforth we ensured the outside flight was always well stocked with live food, although there was plenty inside as well. As there is a Russian Vine growing over the aviary it was necessary to throw the live food on top of this and as it fell through like solid rain—or manna from Heaven maybe to her—she darted around gathering it up.

I must say that at times I was very tempted to return the male bird to the flight for I feared that the rearing of four ever-hungry

mouths might prove too much for her on her own. During the brief periods we were able to watch them she appeared to make a habit of feeding them every twenty minutes or so. After discussing the matter, we decided to take a chance for she seemed so happy and content with her chicks and the calling of the male bird had no apparent disturbing effect on her. It was just at this stage that a heat wave really began to make itself felt within the birdroom and it was interesting to note the way in which she ceased to brood them, but just perched on the side of the nest clear of their bodies.

The youngsters continued to thrive and on the eleventh day it was intriguing to watch the manner in which she was attempting to entice them out of the nest. She would fly in from the outside flight with a mealworm across her beak and take up a position on a branch about nine inches away from the nest. Here she would call to them and then turn and fly out again. Her efforts were finally rewarded by one of them venturing forth and making the branch with a combined hop and flap of its little wings. The branch was slightly below the level of the nest. However, that was the only one that came out that day and since it fell to the floor when attempting to make the return trip, my wife picked it up and replaced it in the nest. It was about a five feet drop to the floor, but as this was covered with thick peat no harm was done.

The following day, i.e. 7th July, all four chicks were out of the nest and had taken up positions on some low branches in the flight. It was now possible to study the chicks closely for, after the experiences of previous years, we had not attempted to go too near to them up to then. Their general colouring was dark brown above with a collar of dark fleckings and the under parts a clear buff. Their tails were practically nonexistent at this stage, giving them the appearance of little balls of feathers on legs as they hopped around the flight.

The rapid change that took place in their plumage after leaving the nest was amazing for, within 48 hours, the collar of fleckings had extended until it completely covered up the upper portion of their breasts and the under parts had changed from clear to mottled. In fact it was now almost a counterpart of the parent bird's general colouring even to the " V " shaped clear patch running from the base of the lower mandible down the throat, except that the underparts were a greyish buff as against the clear buff of the adult birds. By the morning of the 9th July one of them had ventured out into the outside flight which necessitated passing through an entrance hole of 9 in. by 6 in. situated about 3 ft. above ground level. By the evening two of them were regularly making the trip to and fro.

During the limited time we had really to observe them we had seen no signs of their starting to forage for themselves. Whilst they were outside the mother bird used to scratch around at the ground but, up

to now they did not attempt to copy her. They were very tame and would accept mealworms from my wife's fingers.

That same evening, that is when the chicks were fourteen days old, and had been out of the nest for three days, the mother bird was spending all her spare time reconstructing the nest. In fact she appeared to be at it all the time and we were a little anxious as to whether she would desert the chicks or not. However, as soon as we tossed fresh live food in for her she was down and fed them until they all adopted a bleary-eyed, well-content expression.

It was obvious that she was eager to go to nest again, but we did not feel inclined to take the risk of re-introducing the male bird until such time as the chicks were independent and away. We felt that four live youngsters, plus a clear round of eggs maybe, was by far the more attractive proposition.

By the fifth day out of the nest she was feeding them soft food as well as live food and my wife saw her feeding them soaked currants—one of our regular ingredients of the soft food mixture. Two were much in advance of the others and had now started to come out into the outside flight as evening drew on, just as the parent birds always did. The first time this occurred we were a little perturbed about it, wondering if they would go back at nightfall. Our fears were totally unwarranted, however, for the mother bird called them both in when she apparently felt they had had enough. All four of them readily took mealworms from my wife's fingers by now, and on the sixth day we saw them actually picking gentles out of the dish in the inside flight.

By the 14th July, that is 8 days out of the nest, they were all picking up for themselves, although still prepared to accept anything from their mother and, furthermore, there were two eggs in the newly made nest. One of the youngsters appeared to spend all its time carefully sitting on these with no objection by the mother bird. Whether this is a case of mothering instincts coming out at such an early age remains to be seen, for it is difficult enough to sex the older birds without trying to differentiate between them in their baby plumage. The only thing is that they evinced no interest whatever in the old nest once they had vacated it and now only one of the chicks was interested in the new nest and its contents. Further, this particular one seemed to have slightly darker feathering than the other three. Maybe it will turn out to be a hen.

By the time they had been out of the nest a month they, and the mother bird, had all gone into a moult and it will be necessary to wait until this is completed before it will be possible to make any attempt to sex them. The mother bird only laid the two eggs this time and it was from one of these that I was able to obtain the measurements quoted earlier. Up to this time every egg laid had been hatched, but now I do possess two complete eggs.

Having had this success I am now endeavouring to obtain another pair of these thrushes in order to introduce new blood when breeding with the youngsters.

As described above, Charles Everitt has bred the Olive-backed Thrush *Hylocichla ustulata swainsoni*. It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

AMERICAN GROUND DOVE?

By J. P. NEWELL (Athlone, Eire)

When importing some birds from Holland in 1957 I was offered both Peruvian Doves and Pygmy Doves. Being curious as to what exactly were Pygmy Doves, I ordered a pair, and found that they are small doves about six inches long.

The cock's body colour is light grey, slightly darker on back and wings, and with a light purple bloom on the breast. The outer flight feathers are black, visible even when the wing is folded, tail short, grey on upper surface but black on the underparts. The flanks and underparts of the wings are tangerine, only to be seen when the bird is in flight or arches its wings. Scattered royal blue isolated spots and patches are displayed on the wing-coverts. The hen is similar though slightly smaller, and of a browner colour. The voice is a monosyllabic coo, repeated at one-second intervals, eight or nine times.

In the course of my search to identify the exact species of these doves, I have found that reliable literature on foreign doves is scarce. Audubon's "Birds of America", plate 182, Ground Dove (*Columbigallina passerina*), illustrates a brown and a grey dove, which are exactly similar to my pair, except that the brown bird is of a far deeper brown than is mine. Audubon states that "the brown bird is the cock, the grey bird being the hen, length about six and a half inches, underwings reddish, eggs two, on the ground or in bushes, and the bird is found in California, etc."

My pair are extremely nervous little birds, so much so that the hen seems to be incapable of movement for some time after being handled. They have to themselves, an outdoor aviary $6 \times 6 \times 2\frac{1}{2}$ feet wide, half of which is shelter, which contains bushes and various types of nest-box.

In the course of their three unsuccessful breeding attempts, I learned that " the breeding season is January and/or June ", that the young make no sound at any time, either when being fed or calling for food. The courting display consists of one bird taking the other's complete beak into its own, just as in the feeding of young doves. Both heads are then rapidly pumped up and down eight or nine times. That the grey bird is the cock, being larger, more masterful, and " drives the hen " in the typical dove fashion. That the eggs are two in number, white, oval, and shiny. That the nest is composed of short pieces of dry grass placed in a flat open nest-tray, and that partly fledged youngsters are very dark in colour. The most important thing I learned, however, is that inspection of the nest is absolutely fatal to successful breeding, resulting in desertion of the eggs or young, followed by the cock fighting the hen, as if to drive her back to the nest, so necessitating his temporary removal from that aviary.

Last January, when the pair were incubating for some weeks, the cock started to attack the hen, and judging that the youngsters were no longer alive, I entered the aviary to remove him. I was surprised to see a single healthy, partly fledged youngster in the nest, and so hurriedly withdrew. The result of my entering the aviary was as expected, the birds deserted the youngster and so ended another breeding attempt.

During the second week of May, 1959, I saw the cock collecting pieces of short dry grass, and judged that the hen was about to lay. On 1st June a hasty glance showed that the cock was roosting alone, so that the hen was then brooding eggs. On 11th June, I saw the broken egg shells deposited in the flight and knew that the youngsters had emerged—probably on that morning. On 28th June the cock made occasional attacks on the hen, causing her to retire behind a clump of brushwood that I had placed high up in the shelter, for just this purpose. On the following day, these attacks increased in frequency, so that I feared that the hen would not be able to feed, and that, once again the cock would have to be removed. I wondered if it would be possible to hand-rear the youngsters, as I had no other breeding doves on which to farm them out.

On my entering the shelter, two well fledged youngsters darted out of the nest and on to the perches, so I retired to consider my next move. While doing so I noticed that the cock attacked the hen if she came near the youngsters, so I this time removed the hen and awaited developments. Shortly afterwards the cock led both youngsters back to the nest, and stayed with them there, so I decided to leave the youngsters to him. Within a few days they were following him from perch to perch, but at no time have they yet made any vocal sound. They have been self-supporting now for over a week and have been transferred to a separate small aviary.

The youngsters are of a very light brown colour, one slightly browner than the other. They have the reddish under-wings and flanks, also the dark undersurface of short tail, similar to their parents. When running, the tail is turned up at an angle just like that of the wren, but is straight with the body when the birds are perched. The crown of the head and the lower back are marked by narrow dark brown bars, similar to those on the head of a young Budgie. The edges of the wing-covert feathers are white giving very pretty semi-circular white markings on the brown body colour, contrasting with narrow horizontal white lines set in the flight-feathers. The outer flight-feathers are black as in the parents and the royal blue spots on the wing-coverts are also present.

From examination of a flight-feather, I find that the colour of the webbing on one side of the midrib is grey, while on the opposite side of the midrib the colour is reddish, thus giving the grey outer colour and red inner colour to the wings.

I would be glad if I could get some information *re* what species of Ground Dove these birds are.

The two youngsters have been placed in an adjoining compartment of the aviary, and have been independent now for some time. Both are fit and well, but still browner in colour than the parents. I notice that one is inclined to occasionally bully the other—this is a trait of the parents.

When taking away the youngsters from the cock, I introduced the hen, and the pair nested again. I noticed a single broken egg shell on the morning of 30th July, 1959, and presumed that only one egg had hatched. I saw another broken shell on 3rd August, 1959, and wondered what the result would be. From then onwards both birds incubated steadily, and during the brooding the cock was kept busy, driving away the first pair of youngsters when they perched beside the dividing wire netting. This served to distract him from his usual bullying of the hen.

On the evening of 11th August, I saw that a small but well-feathered young dove had fallen from the nest, and when replacing it, a larger young dove darted out of the nest. Later that night I saw the two youngsters and parents were roosting together on one of the perches.

On the morning of 12th August, the smaller bird again fell from its perch, and was not sufficiently fledged to be able to fly back, so I replaced it on the perch, and later I found that both youngsters had been lured back to the nest.

One youngster is definitely more developed than the other, which would account for the difference in dates of my finding the empty shells. But the first shell being found on 30th July, 1959 and the other on 3rd August, would make the youngsters to date 14 days and 11 days

old respectively, and the youngsters must be older than that. True they are small, but they are feathered. There is no question of my not seeing the shells for some time after their being thrown out of the nest, as they are always deposited in the outer corner of the flight, and I was watching for them, in order to find out date of hatching—it is all very puzzling.

Owing to the cock's determination to keep the first youngsters away from his aviary, he used to fly at them even when I was standing quite near, and this has made him tamer. It also probably accounts for the fact that my replacing the fallen youngster did not cause desertion, as was formerly the case. To date, I find that the youngsters perch with the parents at night, but return to the nest tray during the day, and though small, still I think that they will be successfully reared.

* * *

BREEDING THE RED-FACED LOVEBIRD (*AGAPORNIS PULLARIA*) IN SOUTH AFRICA

Bred by DAVID DALE and written and illustrated by JOHN PERRY.
(Pinelands, Nr. Cape Town, S. Africa)

The January/February, 1957 issue of the AVICULTURAL MAGAZINE gives a very interesting and good account of the breeding of *Agapornis pullaria* by Mr. A. A. Prestwich, of Southgate, England. The article is accompanied by an extremely good coloured plate of this fascinating lovebird painted by Mr. D. M. Reid-Henry.

This present article is a follow-up in recording a second success with this difficult species in South Africa. During 1956 I was fortunate in obtaining a pair of these birds from a friend who in turn had obtained them from a sailor on a visiting ship. It is probably not known in England that the importation of foreign birds into South Africa is a very difficult and costly process.

However, I was extremely anxious to try breeding from this pair and having consulted several ornithological treatises on the subject, came to the conclusion that the provision of a nesting site similar to that used by the birds in a natural state would lead to success. The pair was liberated in an aviary approximately 24 ft. long by 12 ft. wide by 7 ft. high in company with a mixed collection of seed-eaters and waxbills.

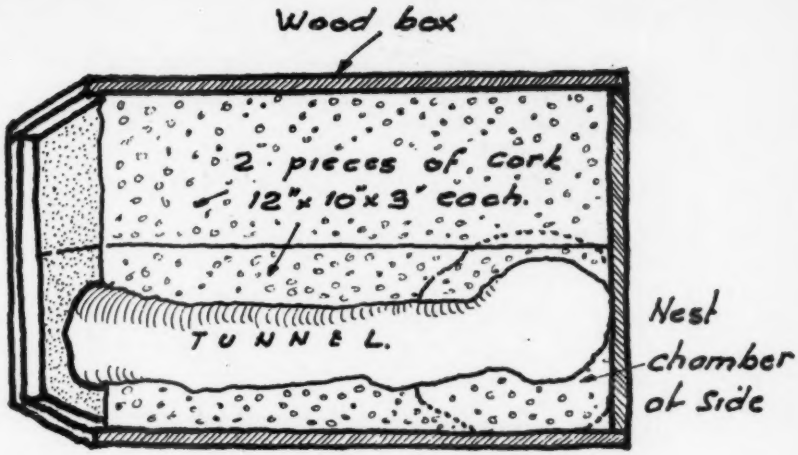
Here in Cape Town most aviculturists provide live food for their birds, when breeding, by supplying a termite which builds mounds of black earth. These are common in parts of the Peninsula and prove an effective means of supplying the necessary feeding material during the breeding season.

It was with the information gained from Cave and Macdonald's

Agapornis pullaria.

" Birds of the Sudan " that I decided to use several of these termites' nests fixed strategically in the aviary as possible nesting sites. At first the pair took no notice whatsoever of these ant-hills but, after about a fortnight, I noticed that a certain amount of burrowing had been undertaken. The burrowing went on until eventually the pair succeeded in making a tunnel right through the ant mound ! This happened in each case and owing to the fact that the weather was rather dry and warm (it being November) the nests soon crumbled and disintegrated altogether.

I was about to try again when by force of circumstance I was compelled to remove my aviary and to dispose of my birds. In January, 1958, my neighbour, David Dale, took this pair over and liberated them in an aviary some 30 ft. by 12 ft. by 10 ft. high with a shelter 12 ft. by 6 ft. by 10 ft. at the southern end, and containing a mixed collection of finches and waxbills and including some Barbary Doves. Knowing of my failure in the use of ants' nests he decided to experiment with cork cubes. Two separate pieces of cork measuring 12 in. by 10 in.



NEST BOX CUT THROUGH CENTRE

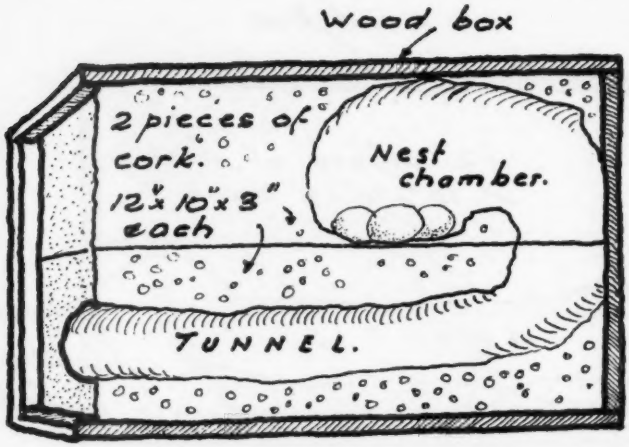
SKETCH "A"

by 3 in. each were fastened together, making an overall size of 12 in. by 10 in. by 6 in. This solid material was then surrounded by $\frac{3}{8}$ in. planking on five sides and hung up in the aviary at the north end, completely in the open. Nothing happened until March, when it was noticed that the female was busy excavating into the cork slab. This went on for a few days until a deep tunnel had been made and the hen eventually disappeared altogether. My friend was very perturbed when the hen disappeared completely for about four weeks. He felt sure she must have died in the nest so he broke the golden avicultural rule by taking down the nest box and peering cautiously inside. To his amazement the hen shot out and to his dismay discovered two young unfledged in the nest *both* dead !

It should be noted that the year 1958 proved to be exceptionally dry for the Cape Province. In fact we enjoyed a long period of warm, sunny days almost throughout the winter, so the nest-box remained dry and unaffected by moisture.

Incidentally, the nest in this instance consisted of a tunnel which ran right through the cork until the wooden back of the box was reached and then turned to one side where a small oval chamber was constructed as shown in illustration A.

This year Mr. Dale made another attempt by placing an entirely new cork nest site in a similar position and of the same external



NEST BOX CUT THROUGH CENTRE
SKETCH "B"

construction. In early February the pair settled down again to burrowing and formed an opening approximately 1½ in. in diameter. This extended, as before, right through the cork to the back of the covering box. This time, however, the tunnel rose vertically and over towards the front where the breeding chamber was constructed as indicated in sketch "B". Another interesting feature of their behaviour this time was the fact that the hen did not hide away in her nest as previously, but was seen to leave the nest twice a day to be fed by the cock. The male was also noticed carrying to the nest small pieces of the leaves of a creeper (commonly known as the Morning Glory) under its mantle.

By the first week in March it was fairly certain that breeding operations had commenced in earnest. At the beginning of April the hen left the nest more frequently and stayed out for longer periods. She also commenced feeding herself. Both male and female paid regular visits to the nest and both slept in the nest at night. On 30th May the first young bird, fully fledged, left the nest although no sound of young had been heard. This youngster was strong in flight and had a somewhat deeper green body-colour than the parents. The head was orange and the bill pale orange tipped with black. On 3rd June a second baby left the nest, this specimen having a deep red head with traces of black on the under-wing, so it is fairly certain that it is a male. I should mention at this stage that this year we have experienced one of the wettest periods for years, so that the nest was exposed to a

continuous downpour for days on end. Mr. Dale fully expected the young to be drowned in the nest. On 6th June a third chick left the nest and on 11th June a fourth. It was thought that this must be the full nest of young, but to Mr. Dale's great surprise a fifth baby has now appeared (14th June) and is being fed by the parents at the nest entrance.

The birds were fed on a seed mixture consisting of yellow manna, Japanese manna, Canary seed and golden millet. Sunflower seed was also readily available. It appears also that the parent birds fed the young on the leaves of the Morning Glory creeper.

I believe that this is the first record of breeding the Red-faced Lovebird in South Africa, so I think Mr. Dale is to be congratulated on his achievement.

P.S.—6th July. All five young ones are in excellent condition and are now fending for themselves.

* * *

DWARF MACAWS

By DAVID WEST (Montebello, California, U.S.A.)

The Dwarf Macaws appear to have been largely ignored by aviculturists, quite possibly because they are not generally available and are not a brightly coloured group. Their failure, if it be, for lacking bright colours is possibly more than made up by their quaint habits, their more congenial size, and generally winning ways.

Here in California the Severe appears to be the most commonly seen, and even these are by no means common and usually command at least twice the price of the larger macaws, such as the Blue and Gold for example. The Illiger's would appear to be the second in availability, and here again they are definitely not common.

The Spix, fabled and long sought after, does not appear in any of the Californian collections, public or private, known to the writer. This is to be regretted because apparently they are among the most desirable of the small macaws, as well as the most striking in coloration.

Two rare Dwarf Macaws now in the writer's collection are a female Red-bellied and a male Coulon's Macaw. The latter does not appear to have been mentioned by Tavistock, Seth-Smith, or in any of the past issues of the AVICULTURAL MAGAZINE with which the writer is familiar. However, this species is described in the *Catalogue of the Birds in the British Museum*, Volume XX. Incidentally it is difficult in the extreme to see how *couloni* could be considered a subspecies of the Illiger's. Years ago I had a pair of Illiger's and they are as vastly different from the Coulon's as an Elegant is from a Rosella. The Red-bellied is mentioned by Tavistock and appears to have been imported into England.

It is of some interest to know that these two birds appear to be rather fond of each other, and while in Mr. Roland Muller's collection

at Santee they were observed mating. As macaws appear rather prone to hybridizing it is possible that these will eventually reproduce.

Their diet is no problem, and they are very happy with the usual seeds and grains, plenty of fruit, a few peanuts and pine nuts, and an occasional piece of stale bread. They are surprisingly fond of the ribs of Swiss Chard, and prefer it to any other form of green food.

Lastly, mention should be made of the fact that the Red-bellied is, or certainly must be, the closest psittacine relative to the Anseriformes. Rarely have I seen a bird more fond of a bath . . . two or even three times a day the female is seen having a dip, somewhat to the male's disgust . . . who apparently is inclined to think that the Saturday night tubbing is quite sufficient for any bird !

* * *

IMPORTATION OF PARROTS INTO THE UNITED KINGDOM

As a result of representations made by the Hon. Secretary of the Avicultural Society, Mr A. A. Prestwich, and a member of Council, Mr E. N. T. Vane, the ban on the import of Parrots is being partially relaxed. The following letter has been received from the Ministry of Agriculture, Fisheries and Food, Animal Health Division, dated 25th August 1959 :—

" You will recall that several years ago a meeting was held at the Ministry to discuss the possibility of a relaxation of the ban on imported parrots and other psittacine birds. In view of your interest in the matter you may like to know that it is now proposed to proceed with the making of an Order which would permit an owner to bring into Great Britain not more than two birds provided they travel with him ; such birds must not within three months of importation be kept on premises on which there are poultry. Importation may also be authorised by licence granted, subject to conditions, by the Minister of Agriculture, Fisheries and Food or the Secretary of State for Scotland if the birds are required for research, exhibition in a zoo or permanent scientific collection, breeding when an imported bird is specially required, or as pets. Under the proposed new Order no birds may within three months of importation be kept on any premises which are pet shops."

Members of the Avicultural Society have reason to be grateful to Mr Prestwich and Mr Vane for this very satisfactory result of their efforts, which has been achieved after a number of years. It is to be hoped that every effort will be made to prevent any abuse of this concession and any member of the Society who may learn of any contravention of the Order should, in the interests of his fellow aviculturists, report the matter at once to the Ministry of Agriculture, Fisheries and Food.

NOTES ON A HYBRID THRUSH (MALE BLACKBIRD × FEMALE AMERICAN ROBIN) AND NOTES ON A MALE AMERICAN ROBIN PAIRED WITH A FEMALE SONG THRUSH

By WILLIAM C. DILGER (Laboratory of Ornithology and Department of Conservation, Cornell University, Ithaca, New York, U.S.A.)

During the winter of 1957–58 a large planted outdoor flight, measuring 16 feet by 22 feet on the plan and 8 feet high, was occupied by an adult male Blackbird, *Turdus merula* ; three Fieldfares, *T. pilaris* ; an adult female American Robin, *T. migratorius* ; and an adult female Song Thrush, *T. musicus*. In addition, there were several Chipping Sparrows, *Spizella passerina*, and Redpolls, *Carduelis flammea*.

The Blackbird and Fieldfares were hand-raised and sent to us in 1957 through the kindness of Dr. Hans Löhrl of Ludwigsburg, Germany. The Robin was hand-raised by us at the same time. These birds were all maintained on our standard insectivorous bird mixture consisting of equal parts by volume of turkey starter mash, dog-meal, and dried insects. This mixture is moistened with enough cottonseed oil to render it crumbly but not wet. They also received apples and live insects from time to time.

The Blackbird began singing a subsong by March 15 and about two weeks later was in full song. Early in April he began to display to the female Robin. He was very aggressive towards her and several times I considered removing her from the flight. When he wasn't engaged in singing advertising songs or displaying in other ways he would engage in frequent supplanting attacks upon her ; sometimes catching her and pecking at her around the nape.

During his precopulatory displays he would hold his head high, mouth open, crest raised, rump feathers ruffled, tail depressed tightly against the substrate (causing the feathers to curve downward), wings slightly drooped ; and would then walk about with short, rapid steps whilst uttering a high-pitched, querulous squealing sound. This seems to agree essentially with the description of a display mentioned in Witherby (1949) and elsewhere. After a few seconds of this the Robin would usually fly or hop to him and he would then attempt copulation with her. The Robin, however, never was seen to solicit copulation but would immediately flee when he made intention movements to mount. This led to rapid, erratic chases all about the flight until he either caught her or desisted for some other reason. When he would catch her he would hold her, with his bill, by the nape or crown while attempting to forcibly copulate. Some of these " rapes " must have

been successful as will be seen from subsequent events. These activities began shortly before she began to build a nest and persisted throughout egg-laying, but ceased when she began to incubate. However, the Blackbird remained constantly aggressive toward the Robin and supplanting attacks never ceased although they became relatively rare during incubation (when she was mostly unavailable) and increased somewhat when she was feeding her young (since she was again more often active in the flight).

She began building her nest on the 25th of April and completed it three days later. She utilized a simple wooden shelf placed about six feet from the ground and within the sheltered portion of the flight. The nest was a typical Robin's nest with a twiggy base, a mud cup, and lined with fine grasses. The male often made supplanting attacks on her while she was gathering nest material or when she was building. In every case she would drop what material she had in her mouth and flee. She never attempted to go back and pick up such dropped material but would begin gathering all over again ; even if the material dropped into the nest cup.

The first egg was laid early on the morning of April 29th ; the day after the nest was completed. She laid an egg every morning for the next two days but the morning the fourth egg was due the nest platform fell down and all the eggs broke and the nest destroyed. I replaced the platform and building resumed on the morning of May 4th. Two days later the nest was again complete and the same day she laid the first egg of her second clutch. The clutch of four eggs was completed on the morning of May 9th.

On the 19th of May I candled all of the eggs and found that only one was obviously fertile. The fertile egg pipped on the 25th day of May and hatched early the next morning. The female began feeding it tiny earthworms gleaned from the flight that same afternoon. The male was never seen to take the slightest interest in the nest or its contents. She fed the young progressively larger earthworms ; partly supplied by us and partly gathered from the flight. She also utilized both fresh and newly thawed gentles which we supplied from time to time. On June 5th, when the young was eleven days old, it fled from the nest when I went to examine it. I replaced it in the nest where it remained overnight, but the next morning it left again. For the next two days it sat on or near the ground in dense vegetation and periodically clamored for food. The third day it began to follow the female about when hungry.

As soon as the young had left the nest, the female began building another nest. She, like many birds, built only in the morning and would stop this activity around noon. Whenever the young one followed her about while she was gathering nest material she would always eventually turn around and thrust whatever she had in her

mouth into the waiting mouth of the young one. I would then have to go into the flight and extract, with the aid of forceps, the mass of bents, rootlets, mud, etc., and feed it a few earthworms. During the afternoons, when she was not nest building, she would feed her young quite normally. She also was not seen to feed her young nest material when it was not following her about during the first two days after fledging. At this time she fed it perfectly normally—even during the mornings she was building. The male was never seen to approach the fledgling. Many male thrushes take over the job of feeding fledged young while the female is building anew. I finally wearied of extracting nesting material from the mouth of this fledgling and brought it indoors and raised it by hand. The accompanying photograph shows this young hybrid when 16 days old.

The female began to lay again on the 9th of June and finished her clutch of four eggs on the 13th. I candled these eggs on the 16th of June and again found that one was fertile and the others clear. On the 29th of June I removed the eggs and found that the fertile egg contained a well developed but dead embryo. The female had incubated faithfully so that the failure to hatch was not evidently caused by the effects of cooling.

The Blackbird essentially ignored the Song Thrush present in the flight but persecuted the Fieldfares unmercifully. They were trying to nest and were prevented from doing so by the aggressiveness of the Blackbird. I finally removed them to another flight. The Chipping Sparrows and Redpolls were not molested nor did they molest the thrushes.

The natal down of the hybrid thrush was a peculiar tannish gray ; not at all like the almost white down of young Robins but apparently more like that of young Blackbirds. The mouth lining was deep yellow and the mouth flanges were considerably paler, almost cream colored.

The juvenal plumage, at first glance, resembled that of young Robins and several people seeing this bird did not suspect its mixed origin. However, when placed side by side with young Robins of the same age it appeared to be quite different. It was a uniform deep brown above, including the head. Below, it had a deeper and more extensive reddish brown color than have young Robins and the white area of the belly was more restricted. The whitish areas about the eyes and throat so conspicuous in Robins, was much reduced in the hybrid and not pure white but slightly tinged with brownish. There were no white areas in the tail. Young Robins of our eastern subspecies (*T. m. migratorius*) have white at the tips of the outer tail feathers. Young Robins are quite grey above and their heads are blackish. The pale spots on the back are almost white in young Robins and were a very pale tan in the hybrid.

This hybrid is still alive and well and, of course, in its first winter plumage. This closely resembles the juvenal plumage except that the pale spots above and the dark spots below are gone. It is still a brown-backed Robin with a noticeable reduction of white below and around the eyes.

The up-down tail movements, so extreme in the Blackbird and much less so in the Robin, are evidently intermediate in the hybrid. We have recorded its voice from the time it was a fledgling, but have not analysed and compared this information with homologous vocalizations of the Blackbird and Robin ; both of which sound very similar in many respects.

I believe that this hybrid is a female, as I would have expected more melanin in the plumage of the male. Its present brown dorsum is about the same color as the dorsum of female Blackbirds and the heads of both male Robins and male Blackbirds are largely black.

The first day out of the nest the hybrid was seen to sharply raise its hind end immediately after being fed by its mother. She bent down as if to seize the forthcoming fecal material (as she had done so many times before in the nest) but let it fall to the ground instead, regarded it for a moment, and flew off. She was never seen to take any interest in the fecal matter again. Like all young thrushes, this bird would waggle its tail rapidly from side to side, back up, raise its rump, and then defecate. On June 16th it was still behaving in this manner. On the 17th of June the backing up component was missing and the following day the tail-wagging also ceased. On this day it bathed for the first time although it had bath water available for several days previously. However, on June 11th it performed bathing movements (but not drying movements) after I had sponged some soiled feathers around its face and upper breast.

It began pecking at objects on the 9th of June but did not pick up food and eat until the 19th, when it was twenty-five days old. It still required hand-feeding, however, until the 29th.

On June 6th it was sleeping with the head turned back over one shoulder, usually the left, but still occasionally slept with the head merely tilted upward. By June 9th it always slept in the adult fashion.

A search of the avicultural literature and of Gray's book (1958) has revealed no evidence for any previous occurrence of this hybrid. I have concluded, therefore, that this is probably the first time such a bird has been produced.

On May 9th, 1957 I placed an adult female Song Thrush in an unplanted outdoor flight with a plan measurement of 5 feet by 16 feet and 8 feet high. The basal 5 feet of this flight is sheltered on both sides and the top. A number of Chipping Sparrows and Juncos, *Junco hyemalis*, were also present. The Song Thrush was a wild-caught adult purchased from a New York dealer.

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HYBRID PRODUCED FROM A MALE EUROPEAN BLACKBIRD (*T. merula*) AND A FEMALE AMERICAN ROBIN (*T. migratorius*). THIS BIRD IS 16 DAYS OLD.

To face p. 128

On May 27th I introduced a male wild-caught American Robin which had been captured the previous autumn and had become quite tame. From the very first there was much aggression directed at the Song Thrush by the Robin. The latter was clearly dominant but not dangerously so and also was in full song.

On June 5th the Song Thrush began attempting to build a nest on the narrow flange of a steel " L " beam which was part of the aviary frame. Her attempts were unsuccessful because the material kept falling off onto the ground. She utilized small twigs, bents, and bark strips. She finally abandoned all attempts on the 9th.

On June 10th I placed both the Song Thrush and the Robin in the large planted flight mentioned above. I also provided a simple wooden nesting platform which was hung about 6 feet high in the sheltered part of the flight. On June 14th she began building again and had reached the mud-cup stage by noon of the same day. She used much more wet peat fragments mixed with mud than did the female Robin, which used plain mud. The nest was completed the following day and her first egg was laid the next morning. This egg, oddly enough, was unspotted and was practically indistinguishable from a Robin's egg. Four more eggs were laid ; one each day until the entire clutch of five was completed. The last four eggs were typical spotted Song Thrush eggs. She sat on the nest a great deal of the time even when not laying. Serious incubation appeared to commence the day after the last egg was laid.

Whenever she left the nest to feed, drink, bathe, etc., the male would fly up to the nest and sit on the edge until she returned. He frequently peered in at the contents, but never was seen to enter. He usually left as she flew back toward the nest so that they were seldom at the nest together.

The Robin's precopulatory displays were most intense during the nest-building and the egg-laying stage. When the female was perched he would approach her by pivoting on the perch as he hopped closer and closer. This type of approach appeared very much like the one Morris (1954) described for the Zebra Finch, *Poephila guttata*, and which appears to be common in many other species. The female would usually retreat from these advances and a swift chase would result. These would sometimes end in attempted rapes. Like the female Robin, this bird was never seen to solicit copulation. On the ground the male would approach the female by a series of rather slow hops with frequent pauses. During the pauses his tail would rapidly raise and lower a few times with emphasis on the upstroke. His crest was always at least moderately raised and his wings slightly drooped. Once a display resembling that described above for the Blackbird was seen. It differed in not having the head raised nor the mouth opened. The tail was depressed, however, and the wings slightly

drooped. The feathers of the rump were not ruffled but were slightly fluffed. It looked very much like a lower intensity version of the Blackbird's usual display. The Robin also ran about with quick little stiff mechanical steps as did the Blackbird. On this occasion the female did not approach him, however, but flew off instead and was chased by the Robin. A pivoting type approach was never seen when the birds were on the ground.

I had never seen the exaggerated Spread posture, so common in agonistic situations with the Wood Thrush, *Hylocichla mustelina*, given by any species of *Turdus*. American Robins, in similar situations, just fluff out the ventral plumage slightly and raise the crest (Dilger, 1956 a and b). However, on one occasion, I had just placed a handful of mealworms in a dish in the flight which were immediately pounced upon by the Song Thrush ; whereupon the male Robin ran rapidly toward her in a Head Forward threat posture. The normally subservient Song Thrush held her ground instead of fleeing and the Robin immediately went into an extreme Spread posture such as usually is employed by Wood Thrushes. The Song Thrush then fled and the Robin began to feed on the mealworms. It appeared as though the Spread of the Wood Thrush and the so-called Fluff of the Robin are homologous, but that the high intensity form merely has a lower threshold for release in the Wood Thrush than in the Robin. I also once saw this posture in its extreme form in the female Song Thrush and several times in the Fieldfares. On these occasions the situations were similar (an ordinarily less dominant bird temporarily with a strong tendency to hold its ground while being attacked by a normally dominant individual—which performed the Spread).

On July 14th I removed the Song Thrush's eggs and candled them. All were clear. On July 16th she rebuilt the old nest and lined it with wet peat into the rim of which she worked many moss fragments and sprouted seeds. The first egg was laid during the morning of the 18th. She was off the nest most of that day but returned to sit briefly around three in the afternoon. She completed a clutch of four eggs on the morning of the 21st and began to incubate the following morning. The male, again, was quite attentive when the female was away from the nest. I removed these eggs on August 14th and all again proved to be infertile. The eggs of this clutch happened to measure a millimeter wider than those of the previous clutch.

She made no further attempt to nest although she appeared to be in fine health. It may be that the male never succeeded in inseminating her or that there was some serious genetic incompatibility making fertilization or early development impossible.

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BREEDING OF THE BLACK-FACED GRASSQUIT, *TIARIS BICOLOR*, IN CAPTIVITY AND SOME NOTES ON THE COMPARATIVE BEHAVIOR OF THE GENUS

By ROBERT GOODWIN (Laboratory of Ornithology, Cornell University, Ithaca, New York, U.S.A.)

The neotropical genus of finches, *Tiaris*, contains four species, two of which are very familiar to aviculturists as the Cuban Finch (*Tiaris canora*) and the Olive Finch (*Tiaris olivacea*). A third species, the rather uncommon Sooty Grassquit, *Tiaris fuliginosa*, of Brazil and Venezuela, has probably never been kept in captivity outside of its range, while the remaining species, the Black-faced Grassquit, *Tiaris bicolor*, although common through most of its range, has rarely been kept by aviculturists.

The Black-faced Grassquit is distributed through most of the West Indies, except Cuba, the Isle of Pines and the Cayman Islands, and through northern Venezuela and parts of Colombia. It inhabits open country and has become closely associated with the human population, spreading into areas that have been cleared for agriculture. On many of the islands it is common about towns and villages.

I am aware of only two records in the literature of this species having been kept in captivity, but it is probable that there have been other instances which were never reported, especially within the range of the bird. Hopkinson (1938), in summarizing *Records of Birds Bred in Captivity* published by Witherby in 1926, lists one record (1910) for the " Dusky Finch, *Tiaris bicolor* ". He states that the record " can be taken as certain (at least in the author's opinion), but further detail is desirable ". Porter (1936) took back to England two pairs of the Jamaican race, *T. bicolor marchi*, hoping that they would breed the following year. No further report is on record.

In January, 1958, as a result of the kindness of Dr. Juan A. Rivero of the University of Puerto Rico, we received a shipment of two males

and five females of the Puerto Rican race, *T. bicolor omissa*. Several days later, an immature male died of a respiratory infection, but the others survived the ordeal of mid-winter shipment and after a period of molting appeared to be in excellent condition.

Rather than take a chance of losing the remaining male, the birds were kept indoors until July and then they were put in an outdoor aviary measuring 22 × 16 × 8 feet which contained, among other species, a pair of Cuban Grassquits, *T. canora*, and a pair of Yellow-faced Grassquits, *T. olivacea*. In spite of the fact that the latter two species were breeding at this time, there was relatively little interspecific hostility. The *bicolor* spent much time clinging to the wire of the sides of the aviary and did so even after they were habituated. It was not a fear reaction. When the aviary was entered and the birds were approached, they would hide on or near the ground in the dense vegetation. If chased, they often remained on the ground and escaped by running along mouse-like through the grass. In similar situations, *T. olivacea* usually remained in the shrubs while *T. canora* would fly about the upper half of the aviary.

Their food consisted mainly of millet and canary seed which was supplied regularly. Occasionally, one of the birds would be seen running a piece of fresh grass through its bill. In the wild state, they feed on seeds of grasses and other plants. Porter (1930) writes that they are often seen in the company of Honey Creepers foraging in flowering trees. This behavior has also been observed in *T. olivacea* by Skutch (1954), but he states that this occurs when grass seeds are scarce.

Towards the end of July, the male *bicolor* began displaying to the females, but after a short time he began directing his attentions to one female in particular. The main display of the male began with a belabored, arching flight to a perch near the female. This was similar to the "moth flight" which Conder (1948) has described in the Continental Goldfinch, *Carduelis c. carduelis*, except that the tail was not raised in flight. Upon landing, he spread his wings laterally and slightly downward and vibrated them while giving the buzzy, slurred vocalization which is characteristic of the males of this species. The tail was also spread. He displayed in this manner for about two weeks prior to nest-building. As copulation was not observed, it may have occurred on or near the ground.

Because the aviary was thickly planted, I failed to discover the nest until it was nearly completed, so I was unable to determine whether the work is shared by the sexes or whether one of them does most of the building. The males of our *T. olivacea* construct the nests with little or no assistance from the females, while the females of our *T. canora* appear to be largely responsible for the building in that species.

The nest, very similar to that of *T. olivacea*, was a spherical structure four inches in diameter and five and one-half inches high with a small entrance hole in the side and was composed of the stems and leaves of grasses and weeds without a lining of finer material. It was placed at a height of two and one-half feet among the outer branches of an Arrow-wood bush (*Viburnum dentatum*) and the thick growth of bindweed that covered these branches.

The eggs were white, speckled with light brown and one was deposited each day for a period of four days. According to the literature, the usual clutch consists of two or three eggs (Bond, 1943 and 1947). The eggs hatched twelve days after the last egg was laid. During this time, the sole function of the male seemed to be driving away strange birds from the immediate vicinity of the nest. He did not incubate.

Upon hatching, the young were naked as are those of *T. olivacea* and *T. canora*, and they remained so until the juvenal plumage developed. They were ready to leave the nest twelve days after hatching. The juvenal plumage resembled that of the female, but juveniles could be distinguished from the latter by the light color of the bill, especially at the commissural angle which was white at first, becoming darker up to the age of three months at which time the bill could not be distinguished from that of the adult. The young male which we have at present began to molt into the adult plumage when four months old.

Although studies of the comparative behavior of the genus are as yet incomplete, some points might be mentioned. The affinities of *T. bicolor* and *T. olivacea* appear to be rather strong. Both exhibit similar components in their behavior, e.g. the "head-forward" threat display is well-developed and similar and wing-quivering has been incorporated into the sexual displays of the males. The female has a very passive role in the precopulatory phase of both species.

T. canora, on the other hand, is a very singular member of the genus, if, indeed, it is a member at all. The "head forward" threat posture is very poorly developed and appears to have undergone little or no ritualization. In all cases which I have seen, it was immediately followed by overt attack. The common threat display is indistinguishable from the sexual display as described below and it occurs in both intra- and interspecific situations. Wing-quivering in this species, though it may be similarly derived from juvenile begging behavior, appears in a different context than in the other two species. It is often seen in the female preceding and/or during courtship feeding. I have never seen this behavior in the male in any situation, except, of course, in the juvenile.

In *T. canora*, a mutual sexual display is present in which the partners, standing side by side, execute a series of jerky, pumping

movements of the body, accompanied by twittering vocalizations and a sleeking of the plumage except for the feathers of the yellow " bib " which are slightly erected. Moreover, it appears to be the female that commonly instigates these displays by following the male around and landing on a perch close to him. It is interesting to note here that the female *T. canora* does not have as dull a plumage as do the females of the other two species ; that is, the degree of sexual dimorphism is not as great in *T. canora*. This is a condition one might expect to find in a species where a mutual sexual display has evolved. *T. canora* also shows an interesting convergence with the Estrildidae in the development of the social phenomena of " clumping " and mutual preening. Further study will probably clarify the taxonomic status of *T. canora*, but already its present position in the genus *Tiaris* seems to be at least questionable.

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BREEDING GALAPAGOS AND OTHER DOVES IN CALIFORNIA

Professor CARL NAETHER (Encino, Calif., U.S.A.)

A pair of Galapagos Doves I obtained a year or so ago, apparently freshly imported, proceeded almost immediately to nest in my aviary and, I am pleased to report, successfully. The doves nested on a small wooden platform high up under the roof—a location well hidden from general view. To make a long story brief and to the point, this pair raised to independence 3 pairs of youngsters. Then, the unpleasant fighting habit became manifest, with the female attacking the male vigorously almost the whole day long. I separated the two for a time. When I placed them together later on, they hatched another pair of young, to be sure, but did not raise them to independence ; rather they let them starve. This fate befell also the next two pairs of youngsters. Thereafter some of the eggs proved infertile. I forthwith separated the breeding pair and later disposed of it to another fancier.

My Galapagos Doves fed mostly on various seeds. While they would not take mealworms or earthworms, they did eat some Longhorn cheese, cut into small squares and mixed with a little soft food. These doves would dig (not just forage) in the rather soft soil of the planted aviary as if they were seeking live grubs and worms, but I never observed them getting or eating any. Yet they dug holes, throwing the loose soil about with great abandon. I confess I don't know what they were after, unless, perchance, it was seeds, which, however, would not be buried as deep down as the doves were digging. Incidentally, this pair, very much like the pair I kept quite some years ago, would not tolerate other doves in the same aviary. Its behaviour thus tending to prove my point that the species is exceedingly aggressive, and therefore best kept by itself.

So many Galapagos Doves have been reared in captivity during the past year or two, as a result of a large importation, that their price has become quite reasonable, pairs being currently available at $30.00, whereas shortly after importation, the asking price was $50.00.

I might add that interest in breeding foreign doves is quite strong in the U.S.A. at this writing. Moreover, there have been importations of rather rare species, some of them *first* importations. Thus, Mr. Mel Strann, an ardent dove fancier, was fortunate in obtaining some Lemon (Olive) Doves not long ago. To the best of my knowledge, this is the first time these colourful pigeons have found their way to California. The exporter listed them as Rameron or Rameroon Pigeons. Another first importation is the lively Chilean Eared, or Ground, Dove also in the possession of Mr. Strann. Though brought

in quite a few months ago these restless birds, which are very swift flyers, have not as yet nested. Finally, I was fortunate to add some Splendid Pigeons (*Columba speciosa*) to my collection—quite handsome birds, whose tameness and gentleness make them my favourites. This species has, so far as I know, not been reared in the U.S.A.

In conclusion, since moving from Sherman Oaks to Encino, where I had new aviaries built, my doves and my softbills are much more contented since the aviaries are wholly mouse and vermin-proof! Moreover, they are entirely roofed over, thus preventing cats and other nightly " visitors " from disturbing my birds from above. As a result of these precautions, I have been fortunate to raise Mountain Witch, Galapagos, Bartlett's Bleeding Heart, Tambourine, and other species successfully in this new aviary. The doves have a measure of security, of feeling " at home " in their new abode, which seems to conduce to their successful breeding and rearing. One of the principal reasons, in my estimation, why certain doves (or other birds) will not nest in captivity is simply that they feel insecure, that no practical attempt has been made by their keeper to render their captive conditions and surroundings similar to their natural haunts, as by means of plantings of shrubs, etc.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

It is some twenty years since any Tinamou was in the collection, so the purchase of a pair of the Great Grey (or Great Blue) Tinamou (*Tinamus tao*) is of considerable interest, particularly as this species has not previously been exhibited at Regent's Park.

Other species new to the collection are a Chinese Pond Heron (*Ardeola bacchus*) presented by Dr. K. C. Searle (who also sent a Swinhoe's Owlet (*Athene noctua plumipes*)), a Sierra Parrakeet (*Amoropsittaca aymara*) received in exchange and a Black-headed Aracari (*Pteroglossus v. viridis*) presented together with a Scallop-necked Pigeon (*Columba speciosa*), a Purple Sugar Bird and a Yellow-winged Sugar Bird by Messrs. G. H. and J. R. Newmark.

A young One-wattled Cassowary has been donated by F/Lt. E. A. Smith, two Southern White-breasted Crakes by Mr. J. J. van den Brink, a pair of Diamond Doves by Mr. D. Goodwin, a number of young parrots from Guatemala, including the White-browed or Spectacled (*Amazona albifrons*) and what are believed to be the Guatemalan (*A. farinosa guatemalae*), though these may be *A. f. icebs*, by Mr. W. H. Chippendale, and a pair of Black-crested

Finches by Miss E. M. Knobel. Birds received in exchange include a Southern Ostrich (*Struthio camelus australis*), a pair of Partridges, and a number from the Trinidad Zoo including the Antillean Black Hawk (*Buteogallus anthracinus cancrivorus*), Scarlet Ibis, Spectacled Owl (*Pulsatrix perspicillatus trinitatis*), Spix's Scops Owl (*Otus choliba crucigerus*) and the Derbian Kiskadee or Tyrant (*Pitangus sulphuratus derbianus*). A Cock-of-the-Rock (*Rupicola rupicola*) has been purchased and a Red Shining Parrakeet (*Prosopeia tabuensis splendens*) deposited.

Two Upland Geese, two Silver Gulls, a Black-headed Gull, a Blue-faced or Coconut Lorikeet (*Trichoglossus haematod intermedius*), a Green-winged King Parrakeet, four Crested Pigeons, two Spotted Eagle-Owls and a Malayan Glossy Starling have been bred in the Gardens, together with a number of pheasants. The Spotted Eagle-Owl has been bred once before in this country—by Mr. L. Bonhote in 1901. So far as I know, the Black-headed Gull has not previously been bred in the Gardens.

A Gannet chick has been hatched and is now quite large. E. T. Booth records (*Rough Notes*, 1881–1887) that he kept Gannets in the yard of his house at Brighton and in May 1880 a chick was hatched which lived until July 1881, when it was killed by other Gannets living in the yard. In the following year a second bird was bred.

Three eggs have been laid by a Sun Bittern, the second being incubated for a few days and the third for some twenty-eight days when the parents presumably gave up and the egg soon vanished. These birds were received in 1950 and have previously carried pieces of nesting material, but have not attempted to build. This time no nest was made, the eggs being laid on the peat moss between the rocks on the aviary floor. Mr. A. D. Bartlett, then Superintendent of the Gardens, recorded in the *Proceedings* of the Society (1866) that the Sun Bittern was bred here in 1865. Early in May of that year the birds showed signs of wanting to nest by carrying bits of stick, roots of grass and other materials about. As they were seen to try to mix wet dirt with pieces of moss, they were given some mud and clay which they at once commenced to use. They built on the top of a ten-foot tree trunk where an old straw nest had been placed and an egg was laid early in June. Both birds incubated and after twenty-seven days a chick was hatched. The young bird remained in the nest, being fed by both parents on small live fish, some insects and other unspecified foods. It left the nest after twenty-one days and at two months of age was indistinguishable from the parents. The pair repaired the nest with mud and clay and reared a second young one. Bates (*A Naturalist on the River Amazon*) relates that he was told by the natives that the Sun Bittern builds in trees and that the nest, which is made of clay, is beautifully constructed.

BRITISH AVICULTURISTS' CLUB

The sixty-seventh meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, on Monday, 14th September, 1959, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : A. W. Bolton, W. D. Cummings, J. O. D'eath, B. Dittrich, M. D. England, Squadron-Leader C. Everitt, Mrs. C. Everitt, Miss R. Ezra, Colonel H. B. Finch, Mrs. O. L. Gent, Dr. R. Gottlieb, H. J. Harman, L. W. Hill, Dr. E. Hindle, F. E. B. Johnson, M. Kendall, Miss E. M. Knobel, Miss M. H. Knobel-Harman, A. J. Lambert, P. H. Maxwell, S. Murray, W. R. Partridge, A. A. Prestwich, R. C. J. Sawyer, E. A. Tickle, Mrs. P. V. Upton, E. N. T. Vane.

Members of the Club, 28 ; guests, 8 ; total, 36.

Vice-President Miss E. Maud Knobel exhibited her unique lutino Black-headed Caique.

Mr. M. D. England showed his colour films " To Scandinavia for Birds ". A summary by Mr. England will be published in the next number of the magazine.

Meetings and dinners during the 1959–1960 session have been arranged for the following dates :—

9th November, 1959.
11th January, 1960.
14th March, 1960.

The next meeting of the Club is on MONDAY, **9th November, 1959.**

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

The honour of Knight Bachelor was conferred on William Proctor Smith in the Queen's Birthday Honours, " For political and public services in Cheshire."

* * *

The Bronze Medal of the South Australian Avicultural Society has been awarded to R. W. McKechnie, for breeding the Yellow-faced Honey-eater *Meliphaga chrysops*.

* * *

G. P. Jinadasa, Gampola, Ceylon, reports the following breeding results : 3 Ring-necked Parrakeets ; 1 Gouldian Finch, black-headed ; 7 Strawberry Finches, third generation home-bred ;

2 Ribbon Finches; 2 Java Sparrows, from wild-caught parents; 31 Zebra Finches, white, grey, and chestnut-flanked.

* * *

Mr. and Mrs. Wally Hicks, Wollongong, N.S.W., have bred a Swainson's × Scaly-breasted Lorikeet hybrid. The Scaly-breasted laid an egg in an old bucket half full of seed husks. It was successfully incubated and the young one was fully reared, partly by hand. It has now proved its sex by laying eggs.

* * *

Preliminary breeding reports. M. C. Baxter, 1 Red-crested Cardinal. A. V. Griffiths, 1 young Leadbeater's Cockatoo about a month old, from recently imported stock. H. Murray, 2 Barraband's Parrakeets flying. Sir Crawford McCullagh, 8 Splendids and 1 Bourke flying, and 36 various young parrakeets—Elegants, Blue-winged, Stanley, Layard's, Bauer's, Tasmanian Yellow-rumped, Barraband's and Rock Pebblers—in the nest. W. R. Partridge, Lanceolated Jay, four hatched, two reared. H. Pearl, 4 Crimson-winged Parrakeets flying. Dr. K. G. Rothwell, two pairs of Kings nesting. E. N. T. Vane, 2 blue Ring-necked Parrakeets flying.

1958. E. R. Soar, 8 Pekin Robins reared.

* * *

Dr. Frederick B. Warford, San Francisco, reports: "A young pair of Fischer's Lovebirds, one and a half years old, had a clutch of four eggs, hatching three typical Fischer's and one blue. They are now about three months old and have grown into fine feathered birds. The blue was noted at the very first to have a light grey head and now, although the body is typical blue masked, the head, shoulders, and breast remain whitish-grey with ever so slight a blend of darker grey about the position of a Masked but on the cheeks. This pair is from at least five generations back."

* * *

Dr. Sten Bergman, Ronninge per Stockholm, writes: "I thought you might be interested to know the species of the twenty Birds of Paradise I brought back from my last expedition to Dutch New Guinea. They are the Twelve-wired, Magnificent, King, Lesser, and Red—all in very good condition.

The pair of King Birds of Paradise which three years ago reared two young ones—they are in splendid condition—has one young one which was hatched on 29th April, 1959. It left the nest two weeks after hatching, and while it is now (11th June) feeding itself, the female is still giving it some food."

Nearly one hundred members and guests accepted the invitation of the Chairman and Council of the North of England Zoological Society to visit the Zoological Gardens, Chester, on 18th June, 1959. The Chairman of the Society, Mr. G. B. Groundsell, welcomed the visitors and presided at the lunch. Mr. D. Seth-Smith thanked the Chairman and Council on behalf of our members.

The weather was ideal and the Gardens were looking their very best. The Director-Secretary, Mr. G. S. Mottershead, Mrs. Mottershead, their daughter June and her husband Mr. Fred Williams, and indeed the entire staff, were tireless in their efforts to make the occasion really memorable.

* * *

Mrs. Rene Halbaken, Burbank, California, has had some success in breeding the Greater Indian Hill Mynah. In May, 1957, a pair nested in an old Cockatiel nest-box: three eggs were laid, two hatched; one young one died through a chill at seven weeks, but the survivor flourished and has this year been mated. The young in two later nests were allowed to die on about the fourteenth day. 1958, the first clutch of four was laid in March, but heavy rain and a thunderstorm caused the hen to desert her eggs. Second clutch, two hatched, one reared; third, one reared; fourth, one reared. 1959, two young six days old and doing well.

* * *

When he returned for the last time from the Far East the late W. J. C. Frost brought a lorikeet which he had bought at a small port on the west coast of Portuguese Timor. It was a species quite new to him and remained unidentified until just recently, when E. N. T. Vane identified it as *Trichoglossus haematodus flavotectus*, confined to Wetar and Roma, islands just to the north of Timor. It appears to be extremely rare. There is no reference to any previous importation, no illustration, and no skins in either the British Museum or the Leyden Museum. This rarity which is somewhat similar to Weber's Lorikeet in appearance, though larger in size, is at present in the Wassenaar Zoo where it is doing very well.

* * *

In 1956 a new filtration system was introduced at the Edinburgh Zoo's main penguin colony. The resulting clarity of the water induced the Gentoo Penguins to accept fish thrown into the pool. It would now seem that this ability to feed freely without assistance from a keeper has been responsible for almost doubling the number of Gentoos successfully hatched and reared during 1957 and 1958. *The Annual Report*, 1958, of the Royal Zoological Society of Scotland deals fully

with this successful experiment and is of sufficient interest to warrant reproduction.

"In its natural habitats the Gentoo lays two eggs but almost invariably only one young bird is reared, the delay between the hatchings enabling the first chick to assert itself and confiscate all the food disgorged by both parents. The second chick therefore declines and dies, its appearance presumably being of a precautionary nature against infertility of the first egg or of its chick's accidental death during the early and critical hours.

Able to feed abundantly throughout the day the Gentoo parents of the Park's colony can now satisfy their second chick when the first has fed to repletion; but this being foreign to their natural breeding habits an unexpected difficulty was encountered. A chick becomes as big as its parents before ceasing to rely on them for regurgitated food, and, while the adult birds can cope with the demands of one lusty offspring, the continuous feeding of clamouring twins caused the harassed parents to show signs of emaciation. The chicks were therefore removed to a nursery by themselves where they were weaned to hand-feeding by the keepers. This has become the normal procedure when the chicks are about half-grown, at which time the parent birds begin to show the first signs of embarrassment, and the system works perfectly. As against three chicks reared from ten eggs in 1956, the year before the filtration system was in operation, eight were reared from ten eggs in 1957, and a further eight from ten eggs in 1958."

The *Report* also states: "Only three king penguin chicks were reared from a total of twelve eggs . . . The small ringed penguins did not nest during 1958, and although two maccaroni penguin chicks were reared to about half full growth they finally succumbed to mycosis. With the smaller species the difficulty of obtaining fish small enough to feed whole to the growing chicks is an ever-present difficulty."

A. A. P.

* * *

REVIEWS

TASMANIAN BIRDS. By MICHAEL SHARLAND. Angus and Robertson, London, 1958. Price 21*s*.

This is the third edition, extensively revised, of a book first published in 1945. The binding and print are agreeable and the book is a convenient size for a field guide. The first thirteen chapters are devoted to the major groups of Tasmanian species; in the fourteenth (almost a third of the book) the author describes bush and garden birds, a most useful division and one that cannot fail to help town-dwelling amateur naturalists. Finally there are two brief sections on species introduced from Europe and other continents, and on two native species

now extinct. There is a charming coloured frontispiece of the Yellow-throated Honeyeater and a dozen half-tone plates of other species.

Each description is prefaced by a line of heavy type giving the bird's most obvious colours and approximate length ; there follows a rather more detailed account in non-technical language of colour, nesting habits, eggs, and, when distinctive, the song or call. The author's own observations are recorded in many interesting field notes and altogether the book should do much to increase popular interest in the strange and beautiful birds of Tasmania.

If a further edition should be contemplated it would be useful to give a generalised diagram showing the various parts of a bird, and perhaps some line drawings emphasising the distinctive characters of species that closely resemble one another ; in this case the descriptions might be made more detailed. It might also be useful to give a brief note on the Royal Albatross since the absence of records of this species in Tasmanian waters may be due to its having been confused with the Wandering Albatross.

A. L.

BREEDING BRITISH BIRDS IN CAGE AND AVIARY. By R. B. Bennett. Cage Birds, London 1959. Price 15*s*. net.

The author has had over forty years of experience in keeping and breeding British birds and his book, written in a conversational style, imparts the knowledge he has gained on this subject over this long period. The first chapter is devoted to British Birds and the Law in which the 1954 Bird Protection Act is explained and it is made clear what may legally be done both with regard to obtaining and selling British birds. He points out that the restrictions on obtaining wild birds should act as an incentive to breeders to build up good stocks of captive birds and later in the book states " Selective breeding in the hands of the enthusiastic and serious breeder will soon reap its reward and the Act as it now stands will have proved a blessing to the British bird section, rather than the death-knell expected." He makes a very good point, when drawing attention to the fact that it is illegal to sell British birds other than close-ringed specimens bred in captivity, by stating that to conform with this provision the birds must be ringed when still in the nest, which may upset the parents and bring disaster. This is certainly a very difficult problem. There are chapters on outdoor and indoor aviaries, cage breeding, general advice on feeding and hand rearing, and the use of foster parents, as well as on ailments and accidents and show cages ; a standard of scales of points for shows is also included.

A large section is devoted to descriptions of eighty species of British birds which contain many of the author's own observations ; it is a pity, however, that he does not always state whether the species he

is describing has bred in captivity or not. Thirty-five species are illustrated in colour and forty-five in monochrome, all the plates being executed by the author ; in addition he has included line drawings, and photographs taken by himself.

P. B-S.

* * *

CORRESPONDENCE

MAROON PATCH ON WING OF FEMALE SLATEY-HEADED PARRAKEET (*PSITTACULA SCHISTICEPS*)

Both Smythies in his book " The Birds of Burma " and Tavistock in " Parrots and Parrot-Like Birds " state that the female of the Slatey-headed Parrakeet *Psittacula schisticeps* lacks the maroon patch on the wing ; in fact this is generally accepted as the difference in the plumage of the sexes. I am inclined to think, however, that this long-held view may be wrong, and I am strengthened in my belief by a letter I have had from Mr. J. D. Macdonald, Deputy Keeper of Zoology, British Museum (Natural History).

We have a couple of Slatey-headed Parrakeets at Keston which we have always regarded as a pair, since the cock courts and has actually been seen feeding the hen. Hitherto she has lacked the maroon wing-patches, but has now acquired them after her recent moult, although the cock continues to treat her in every way as a hen.

I wrote to Mr. Macdonald asking him for any information he could give me on the subject, and he replied as follows :—

> " In reply to your letter of the 25th, nearly all our specimens of *Psittacula schisticeps* which are sexed as females have no maroon spot on the wing. However, there are two which do have this spot, and this shows, if they are correctly sexed, that at least some females do have this feature. At any rate it does give some support to your findings."

This interested me very much, but as it seems to me most unlikely that some adult female Slatey-headed should have the maroon spot on the wing, while others do not, I should think a far more probable explanation is that the two with maroon wing-patches are the only two *fully* adult female specimens they have at the Museum, the others being younger birds which would be less wary and easier to shoot than the adults.

Incidentally, in *Aviculture* Vol. 2, page 444, Delacour and Tavistock writing jointly say of the Slatey-headed Parrakeet " the sexes are alike ".

EDWARD J. BOOSEY.

BRAMBLETYE,
KESTON, KENT.

JUVENILE PLUMAGE OF MAGPIE-JAYS

I read with great interest Mr. J. L. Throp's fine article on collecting in Mexico as I, too, have made several trips there and came back with nice birds, although I was never fortunate enough to catch the birds myself. I would like to point out that the white spots, or splashes, on the Collie Magpie-Jay's black throat are signs of juvenile plumage. I have had several for many years and the second year the white always disappears. In Bullock's Magpie-Jays the reverse is true as the young birds have black throats which turn white when adult, leaving only a black " necklace ". In any case the white spots or greyish bibs on Collie Magpie-Jays are not a variation of the species.

I have just recently brought back 18 Collie Magpie-Jays and among them are many with the white or grey blotches on their throats. Collie Magpie-Jays are not easy to get as their range is restricted to the states of Sinaloa and Nyarit, with only short overlaps into Duvanga and Jalisco. South from Calina the Bullock's are found.

The Collie is far more beautiful ; I have both species and also the Costa Rican race which is smaller.

A. H. Isenberg.

451 Portola Road,
Portola Valley,
California, U.S.A.

OUR COCK LUTINO PLUM-HEADED PARRAKEET—AN APPEAL

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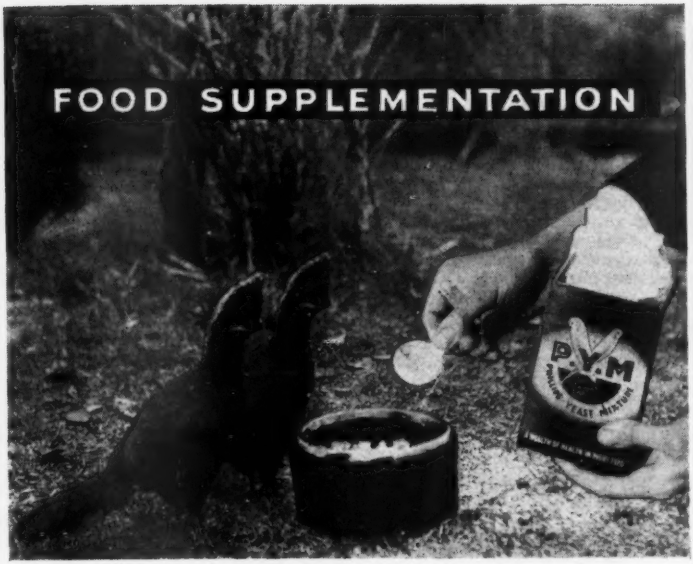
The answer has to be No ; but on the other hand he has proved that he is not sterile : The first " hen " we provided him with proved to be (as is so often the case with this species) an immature cock. The second one was a true hen and they went to nest, rearing one young one until it was well feathered, when it died in the nest ; and shortly afterwards the hen escaped and was killed by a cat while feeding on the ground in front of the avairy. The third one we obtained for him was a genuine hen, but so crippled by frostbite—she had no toes, only two stumps left—that it was hardly surprising that her eggs were clear, although the cock had attempted to mate with her. The fourth, which certainly looked a hen, has just, after two years, moulted out as a cock—hence this appeal for a genuine adult hen, before it is too late.

Bramblетye,
Keston, Kent.

Edward J. Boosey.

* * *



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L. J. ANDERSON, 11 Wight Street, Kyabram, Victoria, Australia. Proposed by A. A. Prestwich.

ANDRÉ AUTISSIER, 4 Rue de Merville, Hazebrouck (Nord), France. Proposed by A. A. Prestwich.

THOMAS BARLING, 154 Clarence Way, Kentish Town, London, N.W. 1. Proposed by F. C. ASTLES.

KEVIN ROSS BAYNES, Maitland Street, Bingara, N.S.W., Australia. Proposed by A. A. Prestwich.

WILLIAM JOHN BOURNE, 25 Lower Church Street, Croydon. Proposed by Mrs. J. E. Robinson.

HARTLEY BROWN, Breeze Hill, Hensingham Road, Whitehaven, Cumberland. Proposed by Miss K. Bonner.

D. W. BUNDSCHUE, Frosty's Tavern, P.O. Box 382, Napavine, Washington, U.S.A. Proposed by A. A. Prestwich.

GERALD ARTHUR CALLCOTT, 68 Rawson Avenue, Tamworth, N.S.W., Australia. Proposed by Miss K. Bonner.

LT.-COLONEL POUL J. CALVERT, 14 Slotsvej, Charlottenlund, Denmark. Proposed by Walther Langberg.

HAROLD G. CHANDLER, 92 Talbot Road, Luton, Beds. Proposed by A. A. Prestwich.

Mrs. ELAINE CHARLES, RMB 439, Grong Grong, N.S.W., Australia. Proposed by A. A. Prestwich.

MICHAEL COUPE, Waverly, 13 South Meade, Timperley, Altrincham, Cheshire. Proposed by A. Martin.

JOHN HENRY BRIGHTON CROFTS, The Laurels, High Road, Elm, Nr. Wisbech. Proposed by K. Russell.

FERNANDO H. DE ALMEIDA, Estrada de Bemfica, 358, Lisbon, Portugal. Proposed by Dr. C. F. Costa.

CLIVE W. DESMOND, 41 Norval Road, North Wembley, Middlesex. Proposed by A. A. Prestwich.

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A. C. EDMONDS, 257 Carter Drive, Romford, Essex. Proposed by Sir Crawford McCullagh, Bart.

B. ENGLISH, Netherbury Hall, Layham, Hadleigh, Suffolk. Proposed by F. E. B. Johnson.

EDWARD R. FITZSIMMONS, 330 West 20th Avenue, San Mateo, Calif., U.S.A. Proposed by A. H. Isenberg.

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R. HOGBEN, 2 Dunkley Street, Port Pirie, South Australia. Proposed by L. M. Brown.

Miss DIANA HOLGATE, The Clough, Barrow Lane, Hale, Cheshire. Proposed by Frank Mosford.

H. W. HUMPHREY, Rosedale House, Brandreth Park, Parbold, Nr. Wigan, Lancs. Proposed by F. E. B. Johnson.

Mrs. S. JOHNSTONE, Mole Hall, Widdington, Nr. Saffron Walden, Essex. Proposed by J. O. D'eath.

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Alan Root, Box 30001, Nairobi, Kenya. Proposed by A. Lambert.
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Tom Yellis, 623 N. Zeyn Street, Anaheim, Calif., U.S.A. Proposed by Miss K. Bonner.

NEW MEMBERS

The thirty-three Candidates for Election in the May–June, 1959, number of the Avicultural Magazine were duly elected members of the Society.

CHANGE OF STYLE

Sir William Proctor Smith, Bexton House, Knutsford, Cheshire.

CORRECTED NAME

Dr. Danai Sanidvonos, 2 Biron, Bang-Kapi, Bangkok, Thailand.

READMITTED

Harold G. Lamm, Curator of Birds, Cleveland Zoological Society, Cleveland 9, Ohio, U.S.A.
John M. Spence, c/o P.E. Museum & Snake Park, 28 Bird Street, Port Elizabeth, South Africa.
Ernest H. Tong, F.Z.S., F.L.A.S., Holly Frindle, Whipsnade Park, Nr. Dunstable, Beds.
John Wilcock, " The Chase ", 259 Duffield Road, Allestree, Derby.

CHANGES OF ADDRESS

Rae V. Anderson, to 13339 Marjay Drive, Lakeside, Calif., U.S.A.
Clive Bennett, to 81 Catherine Street, Denton, Nr. Manchester.
C. Buckingham Jones, to Dibrugarh, Assam, India.
Major A. G. Clark, to The Sherwood Foresters, H.Q. 5 Division, British Field Post Office 32.
P. J. Glover, to The Old Clergy House, Cornwood, Ivybridge, Devon.
Mrs. Joy Graham, to 2 Arlington House, Rosslyn Road, St. Margarets, Twickenham, Middx.
Richard M. Hanson, to 7717—33rd N.E., Seattle 15, Washington, U.S.A.
K. S. Harrap, to 11 Mafeking Road, West Somerton Estate, Bellevue, Bulawayo, Southern Rhodesia.
R. E. Heath, to Greenway Bank, Biddulph, Stoke-on-Trent.
Mrs. Ruby P. Hood, to Whispering Wind Ranch, 34608 Avenue "G", Yucaipa, Calif., U.S.A.
Dr. F. B. Lake, to 95 Richmond Road, Kingston-on-Thames, Surrey.
H. Lever, to "Politelis", Shelley Grove, Hyde, Cheshire.
Leslie G. Lewis, to Sheriff's Office, Court House, Bathurst, N.S.W., Australia.
W. R. Lorrison, to 46 Kings Road, New Haw, Weybridge, Surrey.
G. Lynch, to "Newlyn", Point Clear Road, St. Osyth, Essex.
C. Makin, to "Slievenamon", 65 New Street, Sutton, St. Helens, Lancs.
E. G. Marsh, to Little Well, The Avenue, Sneyd Park, Bristol 9.
Eric A. Maxwell, to "Wards Farm", Gartocharn, Dumbartonshire.
P. Orsatti, to 45 North Service Road, Cooksville, Ontario, Canada.
H. Pearl, to c/o F. S. Smith, 33E. Queensway, Hatfield, Salisbury, Southern Rhodesia.
A. F. Sturgis, to Willow Creek Farms, R.D. 1, Harleysville, Pa., U.S.A.
G. Swanepoel, to P.O. Box 69, Outjo, South-West Africa.
Norman P. Type, to "The Sanctuary", Saddle Road, Magra, Tasmania, Australia.
G. Waterston, to 21 Regent Terrace, Edinburgh 7.
P. L. Wayre, to Hawks Hill, Great Witchingham, Norwich.

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(Coloured Plate Fund)

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Lt.-Col. H. W. Clayden	2	0	0
W. L. Eaves	1	2	0
James Rooney	1	0	0
A. W. Bolton		15	0
James K. Guthrie		15	0

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